SUBCHAPTER 7. REQUIREMENTS FOR DISCHARGES TO GROUND WATER (DGW)

7:14A-7.1 PURPOSE

(a) This subchapter establishes NJPDES permit requirements for persons who discharge pollutants to ground waters of the State. The purpose of the NJPDES discharge to ground water permit is to restore, enhance, and maintain the ground water quality of the State, in accordance with N.J.S.A. 58:10A-1 *et seq.* and the Ground Water Quality Standards (GWQS) in N.J.A.C. 7:9-6.

7:14A-7.2 REQUIREMENT TO DISCHARGE IN COMPLIANCE WITH A VALID NJPDES PERMIT

(a) Persons responsible for discharges to ground water shall comply with all applicable NJPDES regulations.

(b) Except as otherwise provided in N.J.A.C. 7:14A-7.4 and N.J.A.C. 7:14A-7.5, no person shall discharge to ground water prior to obtaining a discharge to ground water permit.

(c) All discharges to ground water permits existing on May 5, 1997 shall continue in full force and effect until renewed or terminated in accordance with the provisions of this chapter.

7:14A-7.3 SCOPE AND APPLICABILITY

(a) Persons responsible for discharges to ground water shall comply with all the requirements of this subchapter, except those persons listed under (c), (d), and (e) below, and in N.J.A.C. 7:14A-7.4.

(b) Persons responsible for the activities, pollution sources, or regulated units listed at (b)1 through 7 below shall comply with the requirements of this subchapter. Persons responsible for discharges not listed below are not exempt from the requirement to obtain a discharge to ground water permit. The list is intended only to be illustrative and is not exhaustive:

1. Surface impoundments;
2. Spray irrigation;
3. Overland flow;
4. Infiltration/percolation lagoons;
5. Residuals surface impoundments;
6. Injection wells; and

7. Land disposal of dredge spoils.

(c) Persons responsible for discharges to ground water from sanitary landfills as provided for in N.J.A.C. 7:26 shall conduct ground water monitoring in accordance with N.J.A.C. 7:14A-9.

(d) Persons responsible for discharges to ground water from hazardous waste facilities as defined in N.J.A.C. 7:26G, shall conduct ground water monitoring in accordance with N.J.A.C. 7:14A-10.

(e) Persons responsible for discharges to ground water associated with land application of residual shall comply with N.J.A.C. 7:14A-20.

7:14A-7.4 EXEMPTIONS

(a) Persons responsible for the following discharges are exempt from the requirement to obtain a discharge to ground water permit:

1. Discharges from single family residential subsurface sewage disposal systems that are designed, constructed, installed and operated in compliance with the Realty Improvement Sewerage and Facilities Act, N.J.S.A. 58:11-23 *et seq.*, and Standards for Individual Subsurface Sewage Disposal Systems, N.J.A.C. 7:9A;
2. Return flows from irrigated agriculture;
3. Discharges that occurred prior to May 5, 1997, except existing permitted discharges identified in N.J.A.C. 7:14A-7.2(c); and
4. Any discharge not to exceed 60 calendar days and in compliance with the instructions of a Department on-scene coordinator or remedial project manager pursuant to 40 CFR 300 (the National Oil and Hazardous Substances Contingency Plan) or 33 CFR 153.10(e) (Pollution by Oil and Hazardous Substances), and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11.

7:14A-7.5 AUTHORIZATION OF DISCHARGES TO GROUND WATER BY PERMIT-BY-RULE

(a) Any person responsible for any of the following discharges to ground water is deemed to have a permit-by-rule:

1. Discharges to ground water from underground injection activities that are eligible for a permit-by-rule under N.J.A.C. 7:14A-8.5;
2. Discharges to ground water from activities associated with the flushing or cleaning of potable water mains and fire water systems, including hydrants and sprinklers;
3. Discharges to ground water from activities associated with the

development of potable water wells;

4. Discharges to ground water from activities associated with the development and sampling of monitoring wells in accordance with a NJPDES permit; and

5. Except when the Department is remediating a contaminated site as defined in N.J.A.C. 7:26C-1.3, discharges to ground water, from wells which test aquifers, not to exceed 30 calendar days, for the purpose of obtaining hydrogeologic data.

(b) Any person responsible for discharges to ground water listed in (b)3i through v below is deemed to have a permit-by-rule if the discharge occurs when:

1. The Department is remediating a contaminated site as defined in N.J.A.C. 7:26C-1.3, pursuant to the rules at N.J.A.C. 7:14B implementing the Underground Storage of Hazardous Substances Act (N.J.S.A. 13:1K-6 *et seq.*), the requirements of the Industrial Site Recovery Act (N.J.S.A. 13:1K-6 *et seq.*), or when the owner or operator of a contaminated site is conducting remediation under Department oversight, or the requirements of the Spill Compensation and Control Act (N.J.S.A. 58:10-23.11), or the Procedures for Department Oversight of the Remediation of Contaminated Sites at N.J.A.C. 7:26C; and

2. The person is in receipt of written approval from the Department.

3. The following ground water discharges are authorized by permit-by-rule under this subsection:

i. Discharges to ground water, not to exceed 90 calendar days, from pilot treatment plants to obtain engineering design data;

ii. Discharges related to in situ biotreatability studies where the discharge will not exceed 180 calendar days from the first date of discharge;

iii. Discharges to ground water not to exceed 30 calendar days from wells to test aquifers for the purpose of obtaining engineering design data;

iv. Discharges to ground water not to exceed 90 calendar days from any other facility or equipment associated with monitoring, engineering, remedial alternatives activities, or design studies necessary to evaluate a contaminated site; and

v. Discharges to ground water to remediate contamination from discharge of heating oil as defined at N.J.A.C. 7:14A-1.2, at a residential building of four units or less.

(c) Any permit-by-rule under (b) above is effective only upon receipt of written approval from the Department.

(d) The Department shall invalidate any permit-by-rule under this section and require any person responsible for the discharge for which the permit-by-rule had been approved to apply for and obtain an individual discharge to ground water permit if:

1. The discharge is likely to contravene the ground water quality standards at N.J.A.C. 7:9-6;

2. The discharge may result in violation of the Surface Water Quality Standards at N.J.A.C. 7:9B.

7:14A-7.6 GROUND WATER PROTECTION PROGRAM (GWPP)

(a) Each discharge to ground water permit, except those identified in N.J.A.C. 7:14A-7.3(c), (d) and (e), and those permitted by rule pursuant to N.J.A.C. 7:14A-7.5, shall include an approved Ground Water Protection Program to ensure that the discharge does not contravene the ground water quality standards at N.J.A.C. 7:9-6 and meets the monitoring requirements of this section and N.J.A.C. 7:14A-7.7.

(b) Unless an alternate program is approved in advance as indicated in (f) below, each Ground Water Protection Program shall include the following components:

1. A monitoring well system, consisting of monitoring wells located in each aquifer that may be impacted by the discharge. Unless the permittee demonstrates otherwise to the satisfaction of the Department, the monitoring well system shall consist of a minimum of one hydraulically upgradient well, and at least three hydraulically downgradient wells. The permittee shall demonstrate the adequacy of the monitoring well system by:

   i. Submission of results of a physical or mathematical ground water flow and/or contaminant transport model demonstrating that the monitoring well system is capable of intercepting contaminant plumes emanating from each pollutant source;

   ii. Submission of results of geophysical methods of analysis such as resistivity/conductivity methods that confirm wells are placed such that they are capable of intercepting contaminant plumes emanating from each pollution source; or

   iii. Submission of results of an alternative method of adequacy testing, approved by the Department in writing;

2. Effluent quality monitoring,

3. A schedule of mechanical and structural testing to determine that the berms, dikes, liners, and wells, and any other engineered devices used as part of a treatment works will function as designed;

4. A list of ground water contaminants for which to monitor, analyze, and

report, including the contaminants identified during the pollutant characterization performed in accordance with N.J.A.C. 7:14A-7.9(d)2; and

5. A schedule, including procedures and techniques for:

   i. Sample collection;

   ii. Sample preservation and shipment;

   iii. Analytical procedures; and

   iv. Chain of custody control.

(c) In addition to the requirements of (b) above, a Ground Water Protection Program shall contain additional treatment works, materials management, best management plans, discharge sampling, flow limitations, effluent limitations, monitoring wells, lysimeters, piezometers, alarms, hydraulic control devices and inspections as required to prevent contravention of the ground water quality standards in N.J.A.C. 7:9-6.

(d) In each Ground Water Protection Program, the Department shall require one or more of the following monitoring programs:

1. A leak detection monitoring program, capable of detecting all discharges from any pollution source not designed to discharge pollutants but from which a discharge could occur as a result of a leak or other structural failure. The leak detection monitoring program shall include:

   i. A monitoring well system that includes the components described at (b)1 above or leak detection devices such as piezometers, alarms, electrical leak detection or leak location systems, or leachate collection systems; and

   ii. A statistical analysis of the monitoring well data collected in accordance with N.J.A.C. 7:14A-7.7, in order to determine whether or not there is statistically significant evidence of a leak from the pollutant source when monitoring is conducted pursuant to (b)1 above.

2. An attenuation monitoring program if any pollution source is known or expected to discharge pollutants. The attenuation monitoring program shall include:

   i. The components described at (b) above; and

   ii. A statistical analysis of the monitoring well data collected in accordance with N.J.A.C. 7:14A-7.7, in order to determine whether or not there is statistically significant evidence of a contravention of the ground water quality standards in N.J.A.C. 7:9-6.

3. A non-point source monitoring program if there are an indeterminate number of pollution sources, or more than one discharge source. The non-point source monitoring program shall consist of:

i. The components described at (b) above; and

ii. A monitoring approach capable of evaluating whether ground water quality standards are contravened at the property boundary, or at another point of compliance as identified in the permit.

(e) When comparing data from monitoring wells, the data collected shall be subjected to the appropriate statistical analyses as described in N.J.A.C. 7:14A-7.7.

(f) If approved by the Department in writing, a permittee may implement an alternate Ground Water Protection Program that ensures compliance with the ground water quality standards of N.J.A.C. 7:9-6 and that meets the monitoring requirements of this section and N.J.A.C. 7:14A-7.7.

7:14A-7.7 GROUND WATER SAMPLING PROCEDURES AND STATISTICAL ANALYSIS REQUIREMENTS

(a) The person responsible for conducting the Ground Water Protection Program established pursuant to N.J.A.C. 7:14A-7.6 shall conduct ground water sampling in accordance with the edition of the Department's Field Sampling Procedures Manual applicable at the time of sampling, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.

(b) When statistical data evaluations are specified by the Department to implement the Ground Water Protection Program, the statistical test chosen shall be conducted separately for each specified constituent in each well, and one of the following statistical methods shall be used to evaluate ground-water monitoring data for each specified constituent:

1. A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's mean and the background water quality mean levels for each constituent;

2. An analysis of variance (ANOVA) based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's median and the background water quality median levels for each constituent;

3. A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background water quality data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;

4. A control chart approach that gives control limits for each constituent; or

5. Another statistical test method that meets the performance standards of (c) below, and has been approved by the Department in writing.

(c) Any statistical method chosen under this section shall comply with the following performance standards, as appropriate:

1. The statistical method used to evaluate ground-water monitoring data shall be appropriate for the distribution of parameters. If the distribution of the parameters is shown by the permittee to be inappropriate for a normal theory test, then the data must be transformed or a distribution free theory test used. If the distributions for the constituents differ, more than one statistical method may be needed.

2. If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background water quality constituent concentrations or a ground-water protection standard, the test shall be done at a type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the type I experiment wise error rate for each testing period shall be no less than 0.05; however, the type I error of no less than 0.01 for individual well comparison shall be maintained. The performance standard does not apply to tolerance intervals, prediction intervals or control charts.

3. If a control chart approach is used to evaluate ground-water monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined after considering the number of samples in the background water quality data base, the date distribution, and the range of the concentration values for each constituent of concern.

4. If a tolerance interval or a prediction interval is used to evaluate ground-water monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval shall contain shall be protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background water quality data base, the data distribution, and the range of the concentration values for each constituent of concern.

5. The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation level (PQL) as defined in N.J.A.C. 7:9-6 that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

6. If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(d) When conducting a leak detection monitoring program, the permittee shall determine whether or not there is a statistically significant increase over background water quality values for each parameter or constituent required in the permit.

1. In determining whether a statistically significant increase has occurred, the permittee shall compare the ground water quality of each parameter or constituent at each compliance point monitoring well designated pursuant to the permit to the background water quality value of that constituent, according to the statistical procedures and performance standards specified under this section.

2. Within the period of time specified in the NJPDES discharge to ground water permit, and after completing sampling and analysis, the permittee shall determine whether there has been a statistically significant increase over background water quality at each monitoring well.

(e) When conducting an attenuation monitoring program, the permittee shall determine whether the discharge complies with the ground water constituent standards for the classification area established pursuant to N.J.A.C. 7:9-6.

1. In determining whether the discharge complies with the ground water constituent standards for the classification area, the permittee shall compare the ground water quality of each parameter or constituent at each compliance point monitoring well designated pursuant to the permit to the background water quality value of that constituent, according to the statistical procedures and performance standards specified under this section.

2. Within the period of time specified in the NJPDES discharge to ground water permit, and after completing sampling and analysis, the permittee shall determine whether there has been a statistically significant contravention of the ground water quality standards.

7:14A-7.8 Required Response To Contravention of Ground Water Quality Standards

(a) To address any contravention of the ground water quality standards that occurs while a discharge to ground water permit is in effect, each permit shall specify the following measures for the permittee to undertake as appropriate:

1. That the permittee shall notify the Department as provided in the permit, including the nature and extent of the contravention, followed by confirmation in writing, by certified mail within a time frame set forth in the permit, after the Department receives information obtained according to N.J.A.C. 7:14A-7.6(b)4;

2. That the permittee shall install additional wells at additional locations to determine the extent of the ground water contamination attributable to the

regulated discharge;

3. That the permittee shall provide additional pretreatment of the discharge to improve its quality by decreasing pollutant concentration;
4. That the permittee shall expand disposal areas onto additional land areas to reduce or minimize the impact of the discharge;
5. That the permittee shall take any other action necessary to comply with the ground water quality standards;
6. That the permittee shall reduce or cease the discharge; and
7. That the permittee shall implement the responses within the time frame required by the permit.

(b) In addition to the requirements of (a) above, any person responsible for a discharge that contravenes the Ground Water Quality Standards as specified in the discharge to ground water permit may be subject to the requirements of N.J.A.C. 7:26C.

7:14A-7.9 GENERAL REQUIREMENTS FOR APPLICATIONS FOR DISCHARGE TO GROUND WATER PERMITS.

(a) In addition to the information required pursuant to N.J.A.C. 7:14A-4.3, an applicant for a NJPDES Discharge to Ground Water permit shall submit information to the Department as follows:

1. All dischargers shall submit the information required pursuant to (d) below, except when, after consultation with the Department during pre-application conferences, it is determined that the information is not necessary to develop permit conditions for the facility.

(b) Submission of information as required under this section shall not exempt the applicant from compliance with any other permit application requirements which apply to the discharge to ground water site, to any treatment system of which the discharge to ground water site is a component, or to any other existing or proposed discharges at the facility.

(c) Pre-application conferences with the Department concerning the information required pursuant to (d) below are recommended.

(d) The following information shall be submitted in the application for the Discharge to Ground Water permit pursuant to (a) above:

1. Project related information as follows:
   i. A description of the facility;
   ii. The nature of the establishment; and
   iii. The total floor area of all structures on site and their maximum

occupancy where necessary to determine the daily volume of discharge;

2. Pollutant characteristics as follows:

   i. The origin and daily volume of discharge;

   ii. Degree of pretreatment of the discharge;

   iii. Characteristics of the quality of the discharge.

      (1) Unless otherwise approved by the Department, all analyses or estimates shall include the following parameters at a minimum:
      (A) Ammonia Nitrogen (NH3-N);
      (B) Nitrate Nitrogen (NO3-N);
      (C) Total Kjeldahl Nitrogen (TKN);
      (D) Biochemical Oxygen Demand (BOD);
      (E) Chemical Oxygen Demand (COD);
      (F) Total Dissolved Solids (TDS);
      (G) Suspended Solids (SS);
      (H) pH;
      (I) Calcium (Ca);
      (J) Magnesium (Mg);
      (K) Sodium (Na);
      (L) Phosphorus (P);
      (M) Fecal coliform bacteria;
      (N) Grease and Oil;
      (O) Metals;
      (P) Base/Neutral compounds;
      (Q) Acid extractable compounds;
      (R) Volatile organics; and
      (S) Pesticides.

      (2) Dependent on the nature of the facility as described in accordance with (d) 1 above, base/neutral compounds, acid extractable compounds, volatile organics and pesticides shall be analyzed for as required pursuant to N.J.A.C. 7:14A-4 - Appendix A; and

   iv. The compatibility of the wastewater with onsite soil conditions and vegetation (if any), shall be substantiated by the applicant;

3. Site related information as follows:

   i. Present tax lot and block, municipality and county in which the facility is located or is proposed to be located;

   ii. A general plan to scale showing at a minimum the location of the Discharge to Ground Water with respect to the following within one half mile of the boundaries of Discharge to Ground Water site:

      (1) Property boundaries;

(2) Roadways;

(3) Existing and proposed land use of Discharge to Ground Water site and surrounding areas;

(4) Adjacent property ownership and all dwellings and buildings of human use or occupancy;

(5) Surface waters, including but not limited to perennial and intermittent streams, lakes, ponds and reservoirs; and

(6) Mines (surface and subsurface) and quarries;

iii. Topographic (two foot contour intervals), geologic and soils (USDA) maps of the discharge to ground water site and surrounding area sufficient to define conditions and evaluate probable impacts of the discharge to ground water .

iv. A plot plan to scale showing:

(1) Discharge to Ground Water area;

(2) Property boundaries;

(3) Roadways;

(4) Pre-treatment facilities;

(5) Storage facilities;

(6) All conveyance and distribution piping;

(7) Any sinkholes, gullies or soil erosional features (natural or man-made) within the Discharge to Ground Water site which divert drainage from or through the facility property;

(8) Existing monitor and piezometer wells;

(9) Water supply wells including the depth of the screened interval and yield;

(10) A wellhead protection area certified by the Department;

(11) Soil borings, test pits and hydraulic conductivity tests;

(12) All wetlands and buffer zones; and

(13) All areas subject to flooding within the 5-, 10- and 25-year storm events; and

v. A well inventory of the area within one half mile of the boundaries of the discharge to ground water indicating the depth of all existing domestic, municipal and industrial supplies. Yields of all wells exceeding 100,000 gallons per day or 70 gallons per minute shall be indicated on a location map or key map.

4. Soils and geologic evaluation as follows:

i. A sufficient number of borings shall be made of the disposal site to characterize and verify the subsurface conditions beneath the site with respect to the types of material, uniformity, depth to bedrock, and ground water elevations. When, in the judgment of the Department, the number of borings is not sufficient to adequately describe the geologic formations and ground water flow patterns below the disposal site, in regard to potential contaminant migration paths, supplemental borings or geophysical methods will be required;

ii. Data obtained from borings shall be collected by standard undisturbed soil sampling techniques for engineering properties, and split spoon sampling or standard penetration tests for classification. Samples shall be collected and classified continuously for the first 20 feet of boring and at five foot intervals thereafter;

iii. All borings shall extend to a minimum depth of 20 feet unless specified by the Department. The Department shall require deeper borings in areas in which 20 feet is not sufficient to describe the geologic formations and ground water flow patterns in regard to the potential contaminant migration paths;

iv. Logs shall be submitted for each boring, regarding rock and soil conditions encountered. Each log shall include a soil or rock description in accordance with recognized standard methods (USDA, Unified or Burmeister Soil Classification System; Rock Quality Description System), depth of individual soil or rock strata, water levels encountered, blow counts, depth of soil tests and dates. All depths described within the boring logs shall be correlated to New Jersey Geodetic Control Survey Datum;

v. A sufficient number of test pits necessary to characterize all soil series within the discharge to ground water site shall be excavated. Each test pit log shall describe each recognizable soil horizon or substratum for depth and thickness, soil color using the Munsell System of Classification (including abundance, size and contrast of mottling where present), soil texture using the USDA Soil Textural Classification System, an estimation of the volume of coarse fragment (where present), soil structural class and soil consistency;

vi. A determination of depths to seasonal high water table specifying the methodology used to make the determination; and

vii. A description of the physiographic region and geologic formation(s) into which pollutants are discharged. Site specific geology including, but not limited to, bedrock outcrop, strike and dip of sedimentary formations and foliation trend and dip angles of igneous and metamorphic rocks, faults, joint and fracture trends in bedrock including dip angles, trend direction of solution channels in karst topography, saprolite development, clay lenses or fragipans, perched

water tables or any other geologic features which may impede the treatment and/or disposal of pollutants shall be described;

5. Hydrogeologic evaluation as follows:

   i. A determination of ambient or background ground water quality shall be required for the parameters listed in (d)2iii(1) above. The well used to characterize background water quality shall be located where unaffected, or if not possible where least impacted, by the discharge. Data shall be provided to show that background water quality wells are located in the same hydrologic units as the wells subsequently used to monitor the impact of the discharge;

   ii. A representative determination of background ground water quality shall be made for all parameters specified in (d)2iii(1) above. A minimum of five samples shall be collected over a time period which is representative of spatial or seasonal variations in quality. The arithmetic mean and variance shall be determined for each respective parameter concentration by pooling the measurements in samples;

   iii. Ground water samples shall be collected within 18 months before the date of receipt by the Department of the application for a permit under this section from well(s) located hydraulically upgradient from the discharge to ground water;

   iv. A sufficient number of tests shall be performed in order to characterize onsite hydrogeologic characteristics, including, but not limited to, horizontal hydraulic conductivity, ground water flow velocity and hydraulic gradient. Where, in the judgment of the Department, the information submitted is insufficient to adequately evaluate the hydrogeologic characteristics of the site, supplemental tests or methods may be required; and

   v. Ground water contour maps shall be submitted depicting both initial piezometric conditions and ground water flow conditions resulting from the growth and/or decay of ground water mound(s) induced by the discharge to ground water. For facilities which have surface impoundments, the ground water contour map for the facility would not need to depict ground water recharge characteristics associated with surface impoundments. Ground water elevations shall be based upon synoptic well data collected within 18 months of the date of receipt by the Department of an application for a permit under this section; and

6. Engineering information as follows:

   i. Engineering plans and specifications for the entire project, describing the proposed treatment process(es) and facilities, storage facilities (if necessary), conveyance systems, disposal facilities, equipment specifications, capacities and all related engineering and operational

data;

ii. Description of the method by which compliance with Ground Water Quality Standards are to be achieved; and

iii. A calculation of the surface run-off across the discharge to ground water site prepared using a 25-year storm, with estimates of the effect of such run-off on wastewater treatment, storage, disposal, and on erosion, flooding and related details.

7:14A-7.10 Additional Requirements for Applications for NJPDES-DGW Permits for Surface Impoundments

(a) In addition to the general requirements for applications for discharge to ground water permits in N.J.A.C. 7:14A-7.9, an applicant for a NJPDES Discharge to Ground Water permit for a surface impoundment shall submit to the Department the information as required in this section.

(b) Surface impoundments with both a primary liner and a secondary liner, as defined in N.J.A.C. 7:14A-1.2, which cover all surrounding earth likely to be in contact with the waste or leachate and which incorporate the use of a leachate collection system located between the liners designed to monitor for any failure of the primary liner and collect all leachate that may pass through as a result of primary liner failure, may pursue the monitoring style in N.J.A.C. 7:14A-7.6(d)1.

(c) Surface impoundments which treat, store, or dispose of hazardous waste shall comply with the requirements of N.J.A.C. 7:26G. Any surface impoundment that is not a solid waste facility pursuant to N.J.A.C. 7:26, shall comply with the provisions of this subchapter.

(d) Information shall be submitted concerning the resistance to oxidation and sunlight exposure of the wastewater to be impounded. Information shall also be submitted as to the physical and chemical compatibility of the liner material with on-site soils and the wastewater constituents.

7:14A-7.11 Additional Requirements Applications for NJPDES-DGW Permits for Spray Irrigation

(a) In addition to the general requirements for applications for discharge to ground water permits in N.J.A.C. 7:14A-7.9, an applicant for a NJPDES Discharge to Ground Water permit for spray irrigation systems shall submit to the Department the information as required in this section.

(b) In addition to the soils evaluation requirements in N.J.A.C. 7:14A-7.9(d)4, soil pH, cation exchange capacity, percent base saturation, exchangeable sodium percentage and electrical conductivity shall be analyzed for each horizon within the soil column for each soil series within the discharge to ground water

area.

(c) Climate related information, reported on a monthly basis, including, but not limited to, total precipitation, total snowfall, mean number of days with precipitation exceeding 0.10 and 0.50 inches, mean temperature, mean daily maximum and minimum temperatures and mean number of days with mean temperature less than 32 degrees Fahrenheit. All data shall be collected from the nearest National Weather Service weather station, for the 10 year period preceding the date of receipt by the Department of the application for a permit under this section.

(d) A description of the proposed cover crop and natural vegetation, including, but not limited to, nutrient requirements, length of growing season, water tolerance and sensitivity to wastewater constituents being land applied as well as a detailed long term vegetation or crop management program, including use or disposal of the crop.

7:14A-7.12 ADDITIONAL REQUIREMENTS FOR APPLICATIONS FOR NJPDES-DGW PERMITS FOR OVERLAND FLOW

(a) In addition to the general requirements for applications for discharge to ground water permits in N.J.A.C. 7:14A-7.9, an applicant for a NJPDES Discharge to Ground Water permit by overland flow shall submit to the Department the information as required in this section.

(b) In addition to the soils evaluation requirements in N.J.A.C. 7:14A-7.9(d)4, soil pH, cation exchange capacity, percent base saturation, exchangeable sodium percentage and electrical conductivity shall be analyzed for each horizon within the soil column for each soil series within the discharge to ground water area.

(c) Climate related information, reported on a monthly basis including but not limited to total precipitation, total snowfall, mean number of days with precipitation exceeding 0.10 and 0.50 inches, mean temperature, mean daily maximum and minimum temperatures and mean number of days with mean temperature less than 32 degrees Fahrenheit. All data shall be collected from the nearest National Weather Service weather station, for the ten year period preceding the date of receipt by the Department of the application for a permit under this section.

(d) A description of the proposed cover crop and natural vegetation, including but not limited to nutrient requirements, length of growing season, water tolerance and sensitivity to wastewater constituents being land applied, as well as a detailed long term vegetation or crop management program, including use or disposal of the crop.

7:14A-7.13 ADDITIONAL REQUIREMENTS FOR APPLICATIONS FOR NJPDES-DGW PERMITS FOR INFILTRATION/PERCOLATION LAGOONS

(a) In addition to the general requirements for applications for discharge to ground water permits in N.J.A.C. 7:14A-7.9, an applicant for a NJPDES Discharge to Ground Water permit by infiltration/percolation lagoons shall submit to the Department the information as required in this section.

(b) Climate related information, reported on a monthly basis including but not limited to total precipitation, total snowfall, mean number of days with precipitation exceeding 0.10 and 0.50 inches, mean temperature, mean daily maximum and minimum temperatures and mean number of days with mean temperature less than 32 degrees Fahrenheit. All data shall be collected from the nearest National Weather Service weather station, for the ten year period preceding the date of receipt by the Department of the application for a permit under this section.

(c) A description of the proposed cover crop or natural vegetation within the lagoon area and a detailed long term vegetation or crop management program, including use or disposal of the crop.

7:14A-7.14 ADDITIONAL REQUIREMENTS FOR APPLICATIONS FOR NJPDES-DGW PERMITS FOR RESIDUAL SURFACE IMPOUNDMENTS

(a) In addition to the general requirements for applications for discharge to ground water permits in N.J.A.C. 7:14A-7.9, an applicant for a NJPDES Discharge to Ground Water permit for a residual surface impoundment or residual infiltration/percolation lagoon shall submit to the Department the information as required in this section.

1. A description of residual characteristics as follows:

   i. The origin and volume of residual;

   ii. Dated analysis of the residual on a mg/kg dry weight basis, including all constituents required to be analyzed in accordance with the Sludge Quality Assurance Regulations (SQAR), N.J.A.C. 7:14C; and

   iii. Additional quality analyses as deemed necessary by the Department based on its evaluation of past SQAR reports or other related information, such as information on industrial discharges which may contribute constituents not normally evaluated under the SQAR program or which may contribute constituents identified in USEPA's Technical Support Document for Surface Disposal of Sewage Sludge.

   iv. Any additional residual monitoring data the applicant compiled prior to applying for a permit, including available ground water monitoring data, with descriptions of well locations and depth to ground water.

2. Operational and procedural information as follows:

   i. Procedures to fill the residual surface impoundment or residual infiltration/percolation lagoon which provide for uniform distribution;

   ii. Application or loading rates as well as procedures for periodic evacuation for cleaning and inspection or to provide the resting phases;

   iii. A schedule for periodic removal of residual and designation of ultimate management sites;

   iv. The frequency of inspection of containment structures for routine maintenance and leakage, wall or liner failures or imperfections and general site management;

   v. A spill control plan (for example, overflow prevention devices and/or high level alarms and automatic shut-off valves on influent lines) and emergency response procedures; and

   vi. Facility operations, including volumes of residual to be handled, methods of handling, facility layout and use or disposal methods; and

3. Surface impoundments which treat, store, or dispose of hazardous waste shall comply with the requirements of N.J.A.C. 7:26G. Any surface impoundment that is not a solid waste facility pursuant to N.J.A.C. 7:26 shall comply with the provisions of N.J.A.C. 7:14A-7.10.

7:14A-7.15 ADDITIONAL REQUIREMENTS FOR APPLICATIONS FOR NJPDES-DGW PERMITS FOR DISPOSAL OF DREDGE SPOILS

(a) In addition to the general requirements for discharge to ground water permits in N.J.A.C. 7:14A-7.9, an applicant for a NJPDES Discharge to Ground Water permit for land application of dredge spoils shall submit to the Department the information as required in this section.

(b) The applicant shall provide a proposed dredge spoils disposal plan containing the following components:

1. An engineering design and construction plan, including at a minimum;

   i. A description of proposed pre-construction site work, grading, and foundation preparation;

   ii. A description of characteristics of liners or other foundation materials;

   iii. Results of stability analyses of dikes and berms with respect to operational stresses; and

   iv. A description of the onsite and offsite transportation system, including transportation of dredge spoils to the site, routing, loading/unloading, and construction and maintenance of roads;

2. An operation/maintenance plan that includes:

   i. A plan that details the filling sequence;

   ii. A plan detailing staging, and interim storage of materials prior to disposal into the confined upland site;

   iii. Provisions for dust control, and control of fugitive dust emissions; and

   iv. Use of intermediate and final cover;

3. A Ground Water Protection Program demonstrating that the disposal of dredge spoils will not contravene the Ground Water Quality Standards of N.J.A.C. 7:9-6. The Ground Water Protection Program shall identify and discuss the monitoring system to be employed pursuant to N.J.A.C. 7:14A-7.6(b) in consideration of the following:

   i. With the exception of facilities which qualify for the monitoring style in N.J.A.C. 7:14A-7.6(d)1, the maximum leachate concentration of the dredge spoils shall be determined by subjecting an adequate number of samples to leaching tests. The determination of what constitutes an adequate number of samples shall be in accordance with a statistical method, as described in N.J.A.C. 7:14A-7.7 above. Leaching tests shall be performed according to the methods described by the U.S. Army Corps of Engineers, Waterways Experiment Station (WES), or other test approved by the Department.

   ii. With the exception of facilities which qualify for the monitoring style in N.J.A.C. 7:14A-7.6(d)1, the leachate volume shall be estimated using the Hydrologic Evaluation of Landfill Performance (HELP) Model, EPA/600/9-94/xxx, U.S. Environmental Protection Agency Risk Reduction Engineering Laboratory, Cincinnati, OH.

   iii. When the results of (b)3i and ii above indicate that the quality of the leachate shall exceed the ground water quality standards, the plan shall include a ground water flow and solute transport model that can demonstrate that the annual discharge of contaminants in the leachate will not result in contravention of the ground water quality standards; and

4. A closure/post closure care plan, that describes in detail:

   i. The final cover to be used;

   ii. A program to maintain the berms and dikes;

   iii. Plans to maintain or control vegetation; and

   iv. Plans to limit access using fences, and gates, etc.; and

   v. A financial plan that describes in detail how the closure improvements shall be maintained for 30 years

SUBCHAPTER 8. ADDITIONAL REQUIREMENTS FOR UNDERGROUND INJECTION CONTROL (UIC) PROGRAM

7:14A-8.1 PURPOSE AND SCOPE

(a) This subchapter establishes a system of controls to ensure that underground injection practices do not endanger underground sources of drinking water (USDWs). The goal of this subchapter is preventive. The Department's policy is to liberally interpret and enforce this subchapter to prevent the contamination of the State's ground water resources.

(b) This subchapter regulates the disposal of wastes by well injection as well as the underground storage of fluids (including gases) which have been emplaced by means of an injection well and the injection of water. Paragraph (b)1 below sets forth examples of the underground injection activities regulated under this subchapter. All injection wells are divided into five classifications, which are set forth at N.J.A.C. 7:14A-8.2.

1. The following injection wells are among the injection activities regulated under this subchapter:

   i. Any injection well located on a drilling platform within the State's territorial waters;

   ii. Any well, including any dug hole, that is deeper than its largest surface dimension, where the principal function of the well is emplacement of fluids;

   iii. Any septic system, disposal bed, seepage pit, or cesspool used by a generator of hazardous waste, or by an owner or operator of a hazardous waste management facility to dispose of fluids containing hazardous waste;

   iv. Any one subsurface disposal system or multiple subsurface disposal systems, on a single property, for which the aggregate sanitary wastewater design flow is in excess of 2000 gpd, calculated in accordance with the minimum standards for average facilities listed in the Department's Standards for Individual Subsurface Sewage Disposal Systems, at N.J.A.C. 7:9A-7.4; and

   v. Any injection well used to inject industrial wastes, including but not limited to drywells, leaching fields, septic systems, and seepage pits.

2. The following injection activities are not regulated under this subchapter;

   i. Any injection well located on a drilling platform or other site that is beyond the State's territorial waters;

   ii. Any single family residential subsurface sewage disposal system that is designed, constructed, installed and operated in compliance with the Realty Improvement Sewerage and Facilities Act, N.J.S.A. 58:11-23

et seq., and the Department's Standards for Individual Subsurface Sewage Disposal Systems, N.J.A.C. 7:9A, where applicable;

iii. Any hole which is not used for emplacement of fluids underground;

iv. Any injection into a pre-constructed tank for the purpose of storage of fluids. Owners or operators of these injection wells may be subject to the Underground Storage Tank rules at N.J.A.C. 7:14B; and

v. Injection wells used for injection of hydrocarbons which are pipeline quality and are gases at standard temperature and pressure for the purpose of storage.

7:14A-8.2 CLASSIFICATION OF INJECTION WELLS

(a) Injection wells are classified as Class I, II, II, IV or V, as follows:

1. Class I wells are:

i. Wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities, or by any other person, to inject hazardous waste beneath the lowermost formation containing an underground source of drinking water; and

ii. Other industrial or municipal disposal wells which inject fluids beneath the lowermost formation containing an underground source of drinking water.

2. Class II wells inject fluids:

i. Which are brought to the surface in connection with conventional oil or natural gas production;

ii. For enhanced recovery of oil or natural gas; or

iii. For storage of hydrocarbons which are liquid at standard temperature and pressure.

3. Class III injection wells are used in processes to extract minerals or energy, including:

i. Mining of sulfur by the Frasch process;

ii. Solution mining of minerals, including sodium chloride, potash, phosphate, copper, uranium and any other minerals which can be mined by this process;

iii. In-situ combustion of fossil fuel, with the term "fossil fuel" including coal, tar sands, oil shale and any other fossil fuel which can be mined by this process; and

iv. Wells used in the recovery of geothermal energy to produce electric power, but not including wells used in heating or aquaculture, which

fall under Class V.

4. Class IV injection wells are used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, by owners or operators of radioactive waste disposal sites, or by any other person to dispose of hazardous wastes or radioactive wastes into or above a formation which, within two miles of the well bore, contains an underground source of drinking water (USDW).
5. Class V injection wells are injection wells not included in Class I, II, III or IV. Examples of Class V wells include:
   i. Air conditioning return flow wells used to return the water used for heating or cooling in a heat pump;
   ii. Cooling water return flow wells used to inject water previously used for cooling;
   iii. Drainage wells used to drain storm runoff into a subsurface formation, except as regulated under Class IV;
   iv. Recharge wells used to replenish the water in an aquifer;
   v. Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water;
   vi. Sand backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined-out portions of subsurface mines;
   vii. All septic systems or other subsurface sewage disposal systems other than those excluded under N.J.A.C. 7:14A-8.1(b)2ii;
   viii. Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water; and
   ix. Geothermal wells and ground water heat pumps used in heating and aquaculture.

7:14A-8.3 PROHIBITION OF UNAUTHORIZED INJECTION

(a) Any underground injection is prohibited, except pursuant to a permit-by-rule under N.J.A.C. 7:14A-8.5, or pursuant to an individual UIC permit under N.J.A.C. 7:14A-8.8. The construction of any well required to have a permit (including, where applicable, a well permit) under this subchapter is prohibited until such the permit-by-rule is approved or an individual UIC permit is issued.

7:14A-8.4 PROHIBITION OF MOVEMENT OF FLUID INTO UNDERGROUND SOURCES OF DRINKING WATER

(a) No permit-by-rule or individual permit shall be approved or issued under this subchapter in the following circumstances:

1. Where a Class I, II or III well may cause or allow movement of any contaminant into underground sources of drinking water; or
2. Where a Class IV or V well may cause or allow movement of fluid containing any contaminant into underground sources of drinking water, and the presence of that contaminant may adversely affect the health of persons.

(b) For Class I, II and III wells, and any Class IV well allowed under N.J.A.C. 7:14A-8.7(b), if any monitoring indicates the movement of injection or formation fluids into underground sources of drinking water, the Department shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to control or prevent such movement. These additional requirements shall be imposed by modifying the permit in accordance with N.J.A.C. 7:14A-2.12, or the permit shall be terminated under N.J.A.C. 7:14A-2.13 if cause exists, or appropriate enforcement action shall be taken if the permit has been violated.

(c) For Class V wells, if at any time the Department learns that a Class V well may cause a violation of the State primary drinking water rules under N.J.A.C. 7:10, or any Ground Water Quality Standards under N.J.A.C. 7:9-6, the Department shall:

1. Require the owner or operator of the injection well to obtain an individual UIC permit; and
2. Order the owner or operator of the injection well to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation and/or take enforcement action.

(d) Whenever the Department finds that a Class V well may otherwise be adversely affecting the health of persons, the Department may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under (c) above.

(e) Notwithstanding any other provision of this section, the Department shall take emergency action upon receipt of information that a contaminant is present in or is likely to enter an underground source of drinking water that presents an imminent and substantial endangerment to the health of persons.

7:14A-8.5 AUTHORIZATION OF INJECTION INTO CLASS V WELLS BY PERMIT-BY-RULE

(a) An owner or operator of any of the Class V injection wells described at (a)1 or 2 below shall be deemed to have a permit-by-rule for such injection wells provided such person submits the inventory information required pursuant to (c) below and thereafter receives written approval for such injection well from the Department. Such approval shall include any limitations necessary to ensure compliance with applicable ground water quality, surface water quality or cleanup requirements.

1. When the Department is remediating a contaminated site as defined in the Underground Storage Tanks rules at N.J.A.C. 7:26C-1.3, or an owner or operator of a contaminated site is conducting remediation under Department oversight pursuant to the rules at N.J.A.C. 7:14B, the requirements of the Industrial Site Recovery Act (N.J.S.A. 13:1K-6 et seq., as amended), the requirements of the Spill Compensation and Control Act (N.J.S.A. 58:10-23.11), or the Procedures for Department Oversight of the Remediation of Contaminated Sites at N.J.A.C. 7:26C and is in receipt of a written approval from the Department pursuant to this subsection, the following underground injection activities are authorized by permit-by-rule:

   i. Underground injection discharges from pilot treatment plants for the purpose of obtaining engineering design data where the discharge shall not last more than 90 days from the first date of discharge;

   ii. Underground injection discharges from wells to test aquifers for the purpose of obtaining engineering design data where the discharge shall not last more than 30 days from the first date of discharge;

   iii. Underground injection discharges from any other facility or equipment from monitoring, engineering, remedial alternatives analysis, or design studies necessary to evaluate a contaminated site where the discharge shall not last more than 90 days from the first date of discharge, and

   iv. Underground injection discharges to ground water to remediate contamination caused by leaking underground storage tanks at private residences not subject to provisions of the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21 et seq.

   v. Any owner or operator of a Class V underground injection well who has submitted the inventory information, as stated in (c) below, prior to May 5, 1997.

(b) An owner or operator of any of the Class V injection wells described in (b)1 through 7 below is deemed to have a permit-by-rule under this subsection if the owner or operator complies with the applicable requirements specified in this subsection.

1. Subsurface sewage disposal systems, other than those excluded under N.J.A.C. 7:14A-8.1(b)2, that are designed, constructed, installed and operated in compliance with the Realty Improvement Sewerage and Facilities Act, N.J.S.A. 58:11-23 et seq., and the Department's Standards for Individual Subsurface Sewage Disposal Systems, N.J.A.C. 7:9A, where applicable;
2. Injection wells used as a component of closed loop heat pump systems constructed according to any well permit condition(s)/ standards adopted pursuant to N.J.S.A. 58:4A-4.1 et seq. All closed loop systems shall contain only fluids that are allowable under conditions of such well permit, and are leak proof such that the only discharge is heat content;
3. Injection wells used as components of an open loop heat pump system constructed in accordance with all applicable well construction requirements of N.J.A.C. 7:10-12. Any such injection well shall discharge water into the same aquifer from which the water was drawn and with a quality that is the same as the ambient ground water, except for heat content;
4. Air conditioning or cooling water return flow injection wells that are constructed in accordance with all applicable well construction requirements of N.J.A.C. 7:10-12 that discharge water into the same aquifer from which the water was drawn and with a quality that is the same as the ambient ground water, except for heat content;
5. Underground injection of swimming pool filter backwash water and water softener backwash water into seepage pits, when the activity is conducted in accordance with N.J.A.C. 7:14A-8.18;
6. Underground injection wells associated with the feasibility or engineering design studies necessary to obtain or comply with a water supply allocation permit pursuant to N.J.A.C. 7:19 or NJPDES permit pursuant to this chapter; and
7. Underground injection of stormwater runoff from the roofs of buildings, so long as the roofs are devoid of pollutant sources and devices (for example, motors, tanks, drums) that contain pollutants.

(c) The owner or operator of a Class V injection well shall submit inventory information to the Department at the address indicated in (i) below within 90 days of a notification by the Department. Notification shall be a public notice in a local newspaper or in the New Jersey Register, or a written request. The inventory information shall consist, at a minimum, of the following information:

1. The well drilling permit number, where applicable;
2. The facility name and location;
3. The name and address of the legal contact;

4. The ownership of the facility;
5. The nature and type of injection well(s);
6. The operating status of injection well(s); and
7. The type, quantity and quality of discharge.

(d) The Department will notify pursuant to (e) below any owner or operator of any Class V injection well authorized by rule pursuant to this section to apply for and obtain an individual UIC permit if:

1. The injection well is no longer a Class V well;
2. The protection of underground sources of drinking water (USDW) requires that the injection shall be subject to requirements such as corrective action, monitoring and reporting, or operation not required by the permit-by-rule;
3. The injection well is likely to adversely affect the existing or potential use of the aquifer; or
4. The discharge is presumed to contravene the Ground Water Quality Standards in N.J.A.C. 7:9-6

(e). The Department shall notify in writing the owner or operator of a Class V injection well required pursuant to (d) above to apply for and obtain an individual UIC permit. The notice shall include a brief statement of the reasons for the decision, an application form, a statement setting a time by which the owner or operator must file the permit application, and a statement that upon the effective date of the individual UIC permit the permit-by-rule under which the activity had been approved shall no longer apply.

(f) Any owner or operator of a Class V injection well approved under a permit-by-rule pursuant to this section may request to be excluded from the authorization by applying for an individual UIC permit. The owner or operator shall submit an application pursuant to N.J.A.C. 7:14A-8.8, with reasons supporting the request, to the Department. The Department shall not issue a permit for an injection well which is in violation of any other applicable statutes or regulations.

(g) Any approval for a Class V injection well under a permit-by-rule pursuant to this section shall expire upon the effective date of an individual UIC permit issued pursuant to N.J.A.C. 7:14A-8.8 for such injection well.

(h) The owner or operator of a Class V injection well approved under a permit-by-rule pursuant to this section is prohibited from injecting into the well:

1. Upon the effective date of denial of an application;
2. Upon failure to submit inventory or application information in a timely manner pursuant to this section;

3. Upon failure to comply with a request for information in a timely manner pursuant to this section;
4. Upon failure to comply with the provisions of an enforcement action;
5. Upon notification by the Department to cease injection.

(i) Inventory information required pursuant to (c) above shall be submitted to:
Department of Environmental Protection
Underground Injection Control Coordinator
CN-029
Trenton, New Jersey 08625

7:14A-8.6 IDENTIFICATION OF UNDERGROUND SOURCES OF DRINKING WATER

(a) The Department may identify (by narrative description, illustrations, maps, or other means) and shall protect as an underground source of drinking water, all aquifers or parts of aquifers which meet the definition of an "underground source of drinking water" in N.J.A.C. 7:14A-1.2. Even if an aquifer has not been specifically identified by the Department as such, it is an underground source of drinking water if it meets the definition in N.J.A.C. 7:14A-1.2.

7:14A-8.7 PROHIBITION AND ELIMINATION OF UNDERGROUND INJECTION OF HAZARDOUS AND RADIOACTIVE WASTES

(a) Except as provided at (b) below, any underground injection of hazardous wastes or radioactive wastes is prohibited. This specifically prohibits the operation of Class IV injection wells, and prohibits hazardous and radioactive wastes from being injected into Class I injection wells.

(b) The Department may, at its discretion, authorize the construction and/or operation of a Class IV or Class I well to inject ground water that has been treated and is being reinjected into the same formation from which it was drawn. The Department's implementation of this injection activity shall be pursuant to provisions for cleanup of releases under CERCLA, or RCRA, as described in 40 C.F.R. 144.13(c), or when conducted under Department oversight pursuant to the Underground Storage Tanks rules at N.J.A.C. 7:14B, the Industrial Site Recovery Act (N.J.S.A. 13:1K 6 et seq., as amended), or the Procedures for Department Oversight of the Remediation of Contaminated Sites at N.J.A.C. 7:26C. These injection activities shall generally be conducted to alleviate a situation posing a substantial danger to public health or safety or when necessitated by public health or environmental considerations (for example, when injection wells are used as a component of a ground water remediation program).

(c) Abandonment and closure of any injection well that is injecting, or has ever injected, hazardous wastes (including Class IV and Class I injection wells)

shall be performed in compliance with all applicable Department regulations for remediation of contaminated sites including the Procedures for Department Oversight of the Remediation of Contaminated Sites (N.J.A.C. 7:26C).

7:14A-8.8 AUTHORIZATION BY PERMIT

(a) Any underground injection well not authorized by a permit-by-rule in accordance with N.J.A.C. 7:14A-8.5 requires a UIC permit in accordance with this section .

(b) An application for an individual UIC permit shall be submitted in accordance with N.J.A.C. 7:14A-4. An application for a well-drilling permit, if applicable, shall be submitted in accordance with N.J.S.A. 58:4A-4.1, along with the application for a UIC permit.

(c) The information required by the Department for a UIC permit application for a Class I, II, III or V injection well is listed in N.J.A.C. 7:14A-8.17.

7:14A-8.9 ADDITIONAL CONDITIONS APPLICABLE TO CLASS I, II, III AND V UIC PERMITS

(a) The following conditions, in addition to those set forth in N.J.A.C. 7:14A-2.5, apply to all UIC permits for Class I, II, III and V injection wells, and shall be incorporated into these UIC permits either expressly or by reference. If incorporated by reference, a specific citation to this subchapter shall be given in the permit.

1. The permittee does not need to comply with certain provisions of N.J.A.C. 7:14A-6.10 when such noncompliance is authorized by a temporary emergency permit under N.J.A.C. 7:14A-6.14.
2. The permittee shall maintain records concerning the nature and composition of injected fluids in accordance with the requirements of N.J.A.C. 7:14A-6.6.
3. In addition to N.J.A.C. 7:14A-6.7, Notice requirements for facility alterations and additions, a new injection well shall not commence injection until construction is complete, the permittee has submitted the well report as required under N.J.S.A. 58:4A-4.1, where applicable, or has submitted notice of completion of construction to the Department; and
    i. The Department has inspected or otherwise reviewed the new injection well and determined that it is in compliance with the conditions of the permit; or
    ii. The permittee has not received notice from the Department of its intent to inspect or otherwise review the new injection well within 20 days of the date of the well report or the notice of completion of construction submitted to the Department pursuant to (a)3 above, in

which case prior inspection or review is waived and the permittee may commence injection.

4. The following shall be included as information which shall be reported within two hours under N.J.A.C. 7:14A-6.10:

   i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a potable supply well; and

   ii. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into a potable supply well.

5. The following information shall be reported within 24 hours under N.J.A.C. 7:14A-6.10:

   i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW other than as described at (a)4i above; and

   ii. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs other than as described at (a)4ii above.

6. The permittee shall submit written notice to the Department at least 180 days before conversion or abandonment of the well. With the notice, the permittee shall submit a revised plugging and abandonment plan updated as appropriate in compliance with N.J.A.C. 7:14A-8.10(a)5 and 8.12(d).

7:14A-8.10 ESTABLISHING UIC PERMIT CONDITIONS

(a) In addition to the conditions established under N.J.A.C. 7:14A-6.3, each UIC permit is to include conditions meeting the following requirements, when applicable:

1. Construction requirements as set forth in N.J.A.C. 7:14A-8.13, 8.14 or 8.15. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Construction shall not commence until a permit has been issued containing construction requirements (see N.J.A.C. 7:14A-8.3 and N.J.S.A. 58:4A-4.1). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction shall be approved by the Department as minor modifications pursuant to N.J.A.C. 7:14A-16.5A. No such changes shall be physically incorporated into construction of the well prior to receipt of written approval of the modification from the Department;

2. Corrective or preventive action as set forth in N.J.A.C. 7:14A-8.11 and 8.12(b);

3. Operating requirements as set forth in N.J.A.C. 7:14A-8.13, 8.14 or 8.15. The permit shall establish any maximum injection volumes and/or pressures necessary to ensure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to ensure compliance with the operating requirements in N.J.A.C. 7:14A-8.13, 8.14 or 8.15;

4. Monitoring and reporting requirements as set forth in N.J.A.C. 7:14A-8.13, 8.14 or 8.15. The permittee shall be required to identify types of tests and methods used to generate the monitoring data;

5. A permit for any Class I, II, III or V well, or any Class IV well allowed under N.J.A.C. 7:14A-8.7, shall include conditions to ensure that plugging and abandonment of the well will not allow the movement of fluids either into an underground source of drinking water or from one underground source of drinking water to another. Each applicant for a UIC permit shall submit a plan for plugging and abandonment, taking into account the requirements of N.J.A.C. 7:14A-8.17(a). The plan shall meet, at a minimum, the requirements of N.J.A.C. 7:9-9, Sealing of Abandoned Wells, where applicable. Where the plan meets the requirements of this section the Department shall incorporate the plan into the permit as a condition. Where the Department determines that the permittee's plan is inadequate, the Department shall require the applicant to revise the plan, prescribe conditions meeting the requirements of this section, or deny the application. For purposes of this section, temporary intermittent cessation of injection operations is not abandonment. Cessation of injection operations for a period of three years or more constitutes abandonment. The improper maintenance of a well may constitute abandonment of that well in accordance with N.J.S.A. 58:4A-4.1;

6. For Class I hazardous waste injection wells, the Department shall require the permittee to maintain financial responsibility and resources, in the form of a performance bond or other equivalent form of financial assurance in accordance with 40 C.F.R. Subpart F, 144.60 through 144.70, to guarantee the closing, plugging, and abandonment of the underground injection operation in a manner prescribed by the Department. In lieu of an individual performance bond, a permittee may furnish a bond or other equivalent form of financial guarantee approved by the Department covering all of the permittee's injection wells in the State;

7. A permit for any Class I, II or III well, or for any Class IV well allowed under N.J.A.C. 7:14A-8.7, or injection project which lacks mechanical integrity shall include, and for any Class V well, will include a condition prohibiting injection operations until the permittee shows to the satisfaction of the Department pursuant to N.J.A.C. 7:14A-8.12(c) that the well has mechanical integrity; and

8. The Department shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into

underground sources of drinking water.

7:14A-8.11 CORRECTIVE OR PREVENTIVE ACTION

(a) Applicants for Class I, II or III injection well permits, or for any Class IV well allowed under N.J.A.C. 7:14A-8.7, shall identify the location of all known wells within the injection well's area of review as specified in N.J.A.C. 7:14A-8.12 which penetrate the injection zone. For wells which are improperly sealed, completed, or abandoned, the applicant shall submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water ("corrective or preventive action"). Where the plan is adequate, the Department shall incorporate it into the permit as a condition. Where the Department determines that the permittee's plan is inadequate pursuant to N.J.A.C. 7:14A-8.12(b), the Department shall:

1. Require the applicant to revise the plan;
2. Prescribe a plan for corrective or preventive action as a condition of the permit; or
3. Deny the application.

(b) Requirements for corrective or preventive action are as follows:

1. For an existing injection well, the permit requiring corrective action shall include a compliance schedule for implementing any corrective action required pursuant to (a) above to be completed as soon as possible.
2. For a new injection well, the permit shall prohibit injection until all required corrective or preventive action has been taken pursuant to (a) above.
3. Where the Department determines that a more stringent corrective or preventive alternative is not feasible, the Department shall require as a permit condition that injection pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly sealed, completed, or abandoned well within the area of review, or alternatively, the Department shall require an injection pressure limitation be included as part of the compliance schedule until all other required corrective or preventive action has been taken. The Department shall only approve an injection pressure limitation in satisfaction of the corrective action requirement if the injection pressure limitation will not endanger groundwater resources. The Department reserves the right to deny the application where it determines that the corrective or preventive plan is inadequate.
4. For Class III wells only, the Department shall consider the overall effect of the project on the hydraulic gradient in potentially affected USDWs and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If the Department

determines that corrective action is not necessary, the monitoring program required pursuant to N.J.A.C. 7:14A-8.15(c)2 shall be designed to verify the validity of such determination.

7:14A-8.12 GENERAL OPERATING CRITERIA AND CONSTRUCTION STANDARDS

(a) The area of review for each injection well or each field, project or area of the State shall be determined according to either (a)1 or 2 below. The Department strongly encourages owners and operators of injection wells to provide the Department with data concerning which method is most appropriate for each geographic area or field.

1. The zone of endangering influence shall be that area, the radius of which is the lateral distance from an injection well, field or project, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water. Computation of the zone of endangering influence must be based upon the parameters listed below and must be calculated for an injection time period equal to the expected life of the injection well or pattern. The modified Theis equation in Appendix A, incorporated herein by reference, illustrates one form which the mathematical model may take. This equation is based on the following assumptions:

   i. The injection zone is homogeneous and isotropic;

   ii. The injection zone has infinite areal extent;

   iii. The injection well penetrates the entire thickness of the injection zone;

   iv. The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and

   v. The emplacement of fluid into the injection zone creates instantaneous increase in pressure. Other models, such as those mentioned in the EPA publication Radius of Pressure Influence of Injection Wells (EPA-600/279-170), may be used for different situations encountered in the field or where the model assumptions match those situations more closely, if the Department approves of the model and determines that the model is appropriate.

2. A fixed radius around the well, field or project, of not less than two miles, shall be determined based on the following:

   i. Chemistry of injected and formation fluids;

   ii. Hydrogeology;

   iii. Population and ground-water use and dependence; and

   iv. Historical practices in the area.

3. If the area of review is determined by a mathematical model pursuant to (a)1 above, the permissible radius resulting from such calculation may be less than two miles. Where the radius calculated is significantly less than two miles, however, the Department reserves the right to require the applicant to submit additional information as needed to assess the possible impact of the proposed injection.

(b) In determining the adequacy of corrective action proposed by the applicant under N.J.A.C. 7:14A-8.11 and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the Department shall consider the following criteria and factors:

1. The nature and volume of the injected fluids;
2. The nature and native fluids or by-products of injection;
3. The potentially affected population;
4. Geology;
5. Hydrology;
6. The history of the injection operation;
7. Completion and plugging records;
8. The abandonment procedures in effect at the time the well was abandoned; and
9. The hydraulic connections with underground sources of drinking water.

(c) Requirements for mechanical integrity are as follows

1. An injection well has mechanical integrity if:
   i. There is no significant leak in the casing, tubing or packer; and
   ii. There is no fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.
2. One of the following tests shall be used to determine the presence of significant leaks under (c)1i above:
   i. Monitoring of annulus pressure between the casing and the injection tubing; or
   ii. Pressure test with liquid or gas.
3. One of the following methods shall be used to determine the presence of fluid movement under (c)1ii above:
   i. For Class II injection wells only, well records demonstrating the presence of adequate cement to prevent such migration; or
   ii. The results of a temperature or noise log.
4. The Department shall allow the use of a test to demonstrate mechanical

integrity other than those listed in (c)2 and 3ii above with the written approval of the EPA. The Department shall allow the use of any other alternate method approved by the EPA and published in the Federal Register unless the use of such method is restricted at the time of approval by the EPA.

5. In conducting and evaluating the tests for mechanical integrity described in this subsection, the owner or operator of the injection well and the Department shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Department, he or she shall include a description of the test(s) and the method(s) used. In making its evaluation, the Department shall review monitoring and other test data submitted since the previous evaluations.

(d) Requirements for plugging and abandoning Class I, II, III, IV and V wells are as follows:

1. Prior to abandoning any Class I, II, III, IV and V well, the well shall be plugged with cement or with other EPA-approved material in a manner which will not allow the movement of fluids either into or between underground sources of drinking water. The abandoned well is to be, at a minimum, filled and sealed in conformance with the requirements of N.J.S.A. 58:4A-4.1 et seq., and N.J.A.C. 7:9-9, Sealing of Abandoned Wells, or in conformance with the requirements of N.J.A.C. 7:9A-12.8, if applicable, or in conformance with the requirements established in a NJPDES permit.

2. Placement of the cement plugs shall be accomplished by one of the following:

   i. The balance method;

   ii. The dump bailer method;

   iii. The two-plug method; or

   iv. Any other method acceptable to the Department and the EPA that is at least as protective of the ground water as the methods listed in (d)2i through iii.

3. The abandoned well shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the Department, prior to the placement of the cement plug(s).

4. The plugging and abandonment plan required under N.J.A.C. 7:14A-8.9(a)6 and 8.10(a)5 shall, in the case of a Class III well field, also demonstrate that no movement of contaminants from the mined zone into an underground source of drinking water will occur. The Department shall prescribe aquifer cleanup and monitoring where necessary and feasible to

ensure that no migration of contaminants from the mined zone into an underground source of drinking water will occur.

5. The Department shall require a permittee to monitor and submit reports for a period of time after the well has been plugged and abandoned.

7:14A-8.13 SPECIFIC OPERATING CRITERIA AND CONSTRUCTION STANDARDS APPLICABLE TO CLASS I WELLS

(a) This section establishes the operating criteria and construction standards for Class I wells disposing of municipal and/or industrial wastes (other than hazardous wastes or radioactive wastes), where the injection stream quality meets limits established in an individual UIC permit based on primary drinking water standards or applicable ground water quality standards, including anti-degradation or non-degradation policies.

(b) Construction requirements for Class I wells are as follows:

1. Class I wells shall, at a minimum, be constructed in accordance with the requirements and specifications set forth in N.J.A.C. 7:10-12. More stringent requirements will be imposed, based on an evaluation of the nature of the injection fluid and/or of geological conditions, or where the Department otherwise determines that it is appropriate.

2. All Class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

   i. Depth to injection zone;

   ii. Injection pressure, external pressure, internal pressure, and axial loading;

   iii. Hole size;

   iv. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specifications, and construction material);

   v. Corrosiveness of injected fluid, formation fluids, and temperatures;

   vi. Lithology of injection and confining intervals; and

   vii. Type and grade of cement.

3. All Class I injection wells shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

   i. To obtain approval of the use of an alternative to a packer, the

operator of the injection well shall submit a written request to the Department, which shall set forth the proposed alternative and all technical data supporting its use. The Department shall approve the request if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The Department may approve an alternative method solely for an individual well or for general use.

ii. In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:

(1) The depth of setting;

(2) The characteristics of injection fluid (chemical content, corrosiveness, and density);

(3) The injection pressure;

(4) The annular pressure;

(5) The rate, temperature and volume of injected fluids; and

(6) The size of casing.

4. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Department. At a minimum, such logs and tests shall include:

i. Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to ensure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling; and

ii. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information, that may arise from time to time as the construction of the well progresses. For surface casings and for intermediate and long strings of casings, the following logs shall be used:

(1) For surface casing intended to protect underground sources of drinking water:
(A) Resistivity, spontaneous potential, gamma ray, and caliper logs before the casing is installed; and
(B) A cement bond, temperature, or density log after the casing is set and cemented.

(2) For intermediate and long strings of casing intended to facilitate injection:

(A) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;
(B) Fracture finder logs; and
(C) A cement bond, temperature, or density log after the casing is set and cemented.

5. At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class I wells:

i. Fluid pressure;

ii. Temperature;

iii. Fracture pressure;

iv. Other physical and chemical characteristics of the injection zone; and

v. Physical and chemical characteristics of the formation fluids.

(c) Operating, monitoring and reporting requirements for Class I wells are as follows:

1. Operating requirements shall, at a minimum, specify that:

i. Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to ensure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water;

ii. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited;

iii. Unless an alternative to a packer has been approved under (b)3 above, the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Department.

2. Monitoring requirements shall, at a minimum, include:

i. The analysis of the injected fluids with sufficient frequency to yield data representative of the fluids' characteristics;

ii. Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing;

iii. A demonstration of mechanical integrity pursuant to N.J.A.C. 7:14A-8.12(c) at least once every five years during the life of the well; and

iv. The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of monitoring.

3. Reporting requirements shall, at a minimum, include:

   i. Quarterly reports to the Department on:

      (1) The physical, chemical and other relevant characteristics of injection fluids;

      (2) Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and

      (3) The results of monitoring prescribed under (c)2iv above; and

   ii. The results of the following tests, submitted with the first quarterly report due after the respective test's completion:

      (1) Periodic tests of mechanical integrity;

      (2) Any other test of the injection well conducted by the permittee if required by the Department; and

      (3) Any well repair.

7:14A-8.14 SPECIFIC OPERATING CRITERIA AND CONSTRUCTION STANDARDS APPLICABLE TO CLASS II WELLS

(a) This section establishes operating criteria and construction standards for Class II wells.

(b) Construction requirements for Class II wells are as follows:

1. Class II wells shall, at a minimum, be constructed in accordance with the requirements and specifications set forth in N.J.A.C. 7:10-12. More stringent requirements shall be imposed, based on an evaluation of the nature of the injection fluid and/or of geological conditions, or where the Department otherwise determines that it is appropriate, based on considering potential impacts on ground water quality.

2. All new Class II wells shall be sited in such a fashion that they inject into a formation which has confining zones that are free of open faults or fractures within the area of review.

3. All Class II injection wells shall be cased and cemented to prevent movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

   i. Depth to injection zone;

   ii. Injection pressure, external pressure, internal pressure, and axial loading;

   iii. Hole size;

iv. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specifications, and construction material);

v. Corrosiveness of injected fluids, formation fluids and temperatures;

vi. Lithology of injection and confining zones; and

vii. Type and grade of cement.

4. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of these logs and tests shall be prepared by a qualified log analyst and submitted to the Department. At a minimum, these logs and tests shall include:

i. Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and

ii. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. For surface casings and for intermediate and long strings of casings, the following logs shall be used:

(1) Resistivity, spontaneous potential, gamma ray and caliper logs before the casing is installed;

(2) A cement bond, temperature, or density log after the casing is set and cemented; and

(3) Fracture finder logs, when intermediate and long strings of casing are intended to facilitate injection.

5. At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class II wells:

i. Fluid pressure;

ii. Temperature;

iii. Fracture pressure;

iv. Other physical and chemical characteristics of the injection zone; and

v. Physical and chemical characteristics of the formation fluids.

(c) Operating, monitoring, and reporting requirements for Class II wells are as follows:

1. Operating requirements shall, at a minimum, specify that:

i. Injection pressure at the well head shall not exceed a maximum which shall be calculated so as to ensure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water; and

ii. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

2. Monitoring requirements shall, at a minimum, include:

i. Monitoring of injected fluids at time intervals sufficiently frequent to yield data representative of the fluids' characteristics;

ii. Monitoring of injection pressure, flow rate, and cumulative volume with at least the following frequencies:

(1) Weekly for produced fluid disposal operations;

(2) Monthly for enhanced recovery operations;

(3) Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and

(4) Daily during the injection phase of cyclic steam operations;

iii. A demonstration of mechanical integrity pursuant to N.J.A.C. 7:14A-8.12(c) at least once every five years during the life of the injection well;

iv. Maintenance of the results of all monitoring until the next permit review; and

v. Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well may not be required provided the owner or operator demonstrates that manifold monitoring is comparable to individual well monitoring.

3. Reporting requirements shall, at a minimum, include: An annual report to the Department summarizing the results of the monitoring required under (c)2 above. Previously submitted information may be included by reference.

ii. Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.

7:14A-8.15 SPECIFIC OPERATING CRITERIA AND CONSTRUCTION STANDARDS APPLICABLE TO CLASS III WELLS

(a) This section establishes operating criteria and construction standards for Class III wells.

(b) Construction requirements for Class III wells are as follows:

1. Class III wells shall, at a minimum, be constructed in accordance with the requirements and specifications set forth in N.J.A.C. 7:10-12. More stringent requirements shall be imposed, based on an evaluation of the nature of the injection fluid and/or of geological conditions, or where the Department otherwise determines that it is appropriate, based on considering potential impacts on ground water quality.

2. All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

   i. Depth to the injection zone;

   ii. Injection pressure, external pressure, internal pressure, and axial loading;

   iii. Hole size;

   iv. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specifications, and construction material);

   v. Corrosiveness of injected fluid, formation fluids and temperatures;

   vi. Lithology of injection and confining zones; and

   vii. Type and grade of cement.

3. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Department. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests shall include deviation checks conducted on all holes where pilot holes and reaming are used, at sufficiently frequent intervals to ensure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

4. Where the injection zone is a water-bearing formation, the following

information concerning the injection zone shall be determined or calculated for new Class III wells:

i. Fluid pressure;

ii. Temperature;

iii. Fracture pressure;

iv. Other physical and chemical characteristics of the injection zone;

v. Physical and chemical characteristics of the formation fluids; and

vi. Compatibility of injected fluids with formation fluids.

5. Where the injection zone is not a waterbearing formation, the information in (b)4 above shall be determined or calculated and submitted to the Department.

6. Where injection is into a formation which contains water with less than 10,000 mg/l total dissolved solids (TDS), monitoring wells shall be completed into the injection zone and into any underground sources of drinking water above the injection zone which could be affected by the mining operation. These wells shall be located so as to detect any excursion of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse, the monitoring wells shall be located so that they will not be physically affected.

7. Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, monitoring requirements may be less stringent.

8. Where the injection wells penetrate an underground source of drinking water (USDW) in an area subject to subsidence or catastrophic collapse monitoring wells shall be installed into the USDW in sufficient numbers to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

9. In determining the number, location, construction and frequency of monitoring of the monitoring wells, the following criteria shall be considered:

i. The population relying on the USDW affected or potentially affected by the injection operation;

ii. The proximity of the injection operation to points of withdrawal of drinking water;

iii. The local geology and hydrology;

iv. The operating pressures and whether a negative pressure gradient is being maintained;

v. The nature and volume of the injected fluid, the formation water, and the process by-products; and

vi. The injection well density.

(c) Operating, monitoring, and reporting requirements for Class III wells are as follows:

1. Operating requirements shall, at a minimum, specify that:

i. Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to ensure that the pressure in the injection zone during the injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injection or formation fluids into an underground source of drinking water; and

ii. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

2. Where appropriate, Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required, provided the owner or operator demonstrates that manifold monitoring is comparable to individual well monitoring. Monitoring requirements shall, at a minimum, include:

i. Analyses of the injected fluids with sufficient frequency to yield data representative of the fluids' characteristics;

ii. Installation and use of continuous recording devices to monitor the injection pressure, flow rate and volume;

iii. A demonstration of mechanical integrity pursuant to N.J.A.C. 7:14A-8.12(c) at least once every five years during the life of the well;

iv. Weekly monitoring of fluid level and the parameters chosen to measure water quality in the injection zone; and

v. Quarterly monitoring of wells adjacent to the injection site to detect any migration from the injection zone into a USDW.

(d) Reporting requirements shall, at a minimum, include:

i. Quarterly reports to the Department on monitoring required;

ii. Results of mechanical integrity, and any other periodic test required by the Department, reported with the first regular report after completion of the test; and

iii. Monitoring may be reported on a project or field basis rather than on

an individual well basis where manifold monitoring is used.

7:14A-8.16 SPECIFIC OPERATING CRITERIA AND CONSTRUCTION STANDARDS APPLICABLE TO CLASS V INJECTION WELLS

(a) This section establishes the operating criteria and construction standards for Class V wells.

(b) Class V wells shall, at a minimum, be constructed in accordance with the requirements and specifications set forth in N.J.A.C. 7:9 or 7:9A.

1. Well drilling permit requirements:

   i. Where applicable, any owner or operator of a new Class V well shall obtain a well drilling permit before the commencement of any construction, in accordance with the Subsurface and Percolating Waters Act, particularly N.J.S.A. 58:4A-4.1. Information and applications for a well permit may be obtained from:

   Bureau of Water Allocation
   CN-426
   Trenton, New Jersey 08625

2. Where applicable, individual subsurface sewage disposal systems, septic systems, or disposal beds shall be constructed in accordance with N.J.A.C. 7:9A.

3. The following information shall be submitted to the Department with the application for an individual UIC permit for a Class V well:

   i. Detailed plans for construction of the injection well, including materials used and geologic or soil characteristics;

   ii. Detailed description and analyses of fluids to be injected; and

   iii. Description of the method of injection.

(c) Operating requirements for Class V wells are as follows:.

1. Injection wells constructed in accordance with N.J.S.A. 58:4A-4.1 shall be maintained in accordance with N.J.A.C. 7:10-12 or any other pertinent regulations, or in accordance with requirements of the individual UIC permit.

2. Septic systems, disposal beds, or other subsurface sewage disposal systems shall be maintained in accordance with N.J.A.C. 7:9A or in accordance with the requirements of the individual UIC permit.

(d) Plugging and abandonment requirements for Class V wells are as follows:

1. Class V wells shall be plugged and abandoned in accordance with the requirements of N.J.S.A. 58:4A-4.1 et seq. and N.J.A.C. 7:9-9, Sealing of Abandoned Wells, where applicable. Cessation of injection operations

constitutes abandonment in accordance with the requirements of N.J.S.A. 58:4A-4.1. The improper maintenance of a well may constitute abandonment of that well in accordance with N.J.S.A. 58:4A-4.1. The plugging and abandonment of injection wells constructed or operated in accordance with N.J.A.C. 7:9A are, at a minimum, to be abandoned in accordance with N.J.A.C. 7:9A-12.8.

2. Other Class V wells shall be plugged and abandoned in accordance with the terms of an individual UIC permit. These permit conditions shall include the following conditions:

i. All septic systems, seepage pits, dry wells and cesspools shall be emptied of wastes and removed or filled with gravel, stones, or soil material, in a manner which is acceptable to the administrative authority as defined in N.J.A.C. 7:9A-1;

ii. All influent and effluent lines shall be excavated, removed or sealed such that no leaching of contaminants can occur; and

iii. When components or residuals (for example, gravel filter material, fill material, soil) from an abandoned individual subsurface sewage disposal system are removed from the ground, such components or residuals shall be managed as follows:

(1) Any off site disposal of components and residuals from an abandoned system shall be managed in accordance with the State Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.) and its implementing regulations; and

(2) Onsite management of components and residuals from abandoned systems shall be in a manner which is acceptable to the administrative authority as defined in N.J.A.C. 7:9A-1.

(e) The UIC permit-by-rule authorization for any Class V well which fails to comply with the requirements of this section automatically terminates.

(f) Injection wells that exert a total pressure that exceeds the pressure exerted by the fluid under the influence of gravity at its height above the point of discharge plus the atmospheric pressure, shall be required to follow the standards described for Class I wells.

7:14A-8.17 ADDITIONAL REQUIREMENTS FOR APPLICATIONS FOR INDIVIDUAL UIC PERMITS

(a) In addition to the information required to be submitted pursuant to N.J.A.C. 7:14A-4 and 8.8, and after consultation with the Department, an applicant for an individual NJPDES UIC permit for a Class I, II, III or V well shall submit those items in (a)1 through 5 below as required by the Department.

1. For a permit for an existing Class I, II, III and V well to operate or the

construction or conversion of a new Class I, II, III and V well:

i. A map showing the injection well(s) for which a permit is sought and the applicable area of review, determined as per N.J.A.C. 7:14A-8.12(a). Within the area of review, the map shall show the number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, or wells, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. All wells, reservoirs, and other bodies of water used for public water supply that are within a five mile radius of the injection well shall be indicated. The map shall also show geologic faults, if known or suspected;

ii. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, geological and geophysical logs, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require;

iii. Geologic name(s), maps, and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

iv. Maps and cross sections detailing the geological structure of the local area;

v. Generalized maps and cross section illustrating the regional geologic setting;

vi. Proposed operating data as follows:

(1) Average and maximum daily rate and volume of the fluid to be injected;

(2) Average and maximum injection pressure; and

(3) Source and analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

vii. Proposed formation testing program to obtain an analysis of the chemical, physical, and radiological characteristics of and other information on the receiving formation;

viii. Proposed stimulation program;

ix. Proposed injection procedure;

x. Engineering drawings of the surface and subsurface construction details of the system;

xi. Any expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

xii. Contingency plans to address all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water;

xiii. Plans (including maps) for meeting the monitoring requirements for Class I, II and III wells as specified in this section;

xiv. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under N.J.A.C. 7:14A-8.11; and

xv. Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program.

2. For the approval of operation of a Class I, II, III and V well:

i. All available logging and testing program data on the well(s);

ii. A demonstration of mechanical integrity pursuant to N.J.A.C. 7:14A-8.12(c);

iii. The actual operating data;

iv. The results of the formation testing program;

v. The actual injection procedure;

vi. The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and

vii. The status of corrective or preventive action on defective wells in the area of review.

3. For the approval of the plugging and abandonment of a Class I, II, III and V well or of a plan for same:

i. The type and number of plugs to be used;

ii. The placement of each plug including the elevation of the top and bottom;

iii. The type and grade and quantity of cement to be used;

iv. The method for placement of the plugs; and

v. The procedures to be used to meet the requirements of N.J.A.C. 7:14A-8.12(d)3.

4. For Class I, II and III wells, the corrective or preventive action proposed to be taken under N.J.A.C. 7:14A-8.11.

5. For Class V wells which are subsurface disposal systems, other than those regulated under the Standards for Individual Subsurface Sewage Disposal

Systems, N.J.A.C. 7:9A, the information set forth at N.J.A.C. 7:14A-7.13.

7:14A-8.18 SPECIFIC OPERATING CRITERIA AND CONSTRUCTION STANDARDS APPLICABLE TO PERMIT BY RULE AUTHORIZATIONS FOR UNDERGROUND INJECTION INTO SEEPAGE PITS

(a) This section sets forth the operating criteria and construction standards for underground injection into seepage pits under a permit-by-rule pursuant to N.J.A.C. 7:14A-8.5(b)5.

(b) Design requirements are as follows:

1. When required to protect against accumulation of fine particles that would impair the proper functioning of the seepage pit, a multiple compartment septic tank shall be designed and constructed in accordance with N.J.A.C. 7:9A-8.2.

2. The percolating area shall be the total outside surface area of the seepage pit lining below the inlet and exclusive of any soil horizons with a percolation rate slower than 40 minutes per inch. The bottom of the seepage pit shall not be counted as part of the percolating area. The minimum percolating area shall be determined from the following table based upon the maximum daily volume of discharge and a weighted average of the percolation or permeability rates of all soil layers exposed in the sidewalls. In no case, however, shall the percolating area be less than 110 square feet.

MINIMUM AREA REQUIRED FOR SEEPAGE PITS, BASED ON ONE GALLON OF LIQUID PER DAY, AND BASED ON THE PERCOLATION RATE OF THE SOIL

Average Percolation Rate (Min/inch)	Minimum Area Per Gallon Per Day (Square feet)
10 or less	0.48
11 to 20	0.72
21 to 30	0.96
31 to 40	1.20
over 40	not acceptable

(c) Construction requirements are as follows:

1. Seepage pits shall be constructed within an excavation affording adequate working space and shall be constructed of stone, brick, cinder, precast concrete or concrete block, or similar material laid dry with open joints where permeable strata have been penetrated, except that if the seepage pit is not of circular construction or if the surrounding ground is subject to cave-in, all horizontal joints shall be mortared so as to prevent structural failure. The following requirements shall be met:
   i. All joints above the inlet, in all cases, shall be made watertight;
   ii. Before placement of backfill, all sidewall areas shall be scarified; and
   iii. The bottom of the seepage pit shall be filled with coarse gravel to a depth of one foot unless the bottom is in a sand or gravel formation.
2. Seepage pits shall be backfilled according to the following procedure:
   i. The space between the excavation and the seepage pit wall shall be backfilled with at least three inches of coarse gravel or filter material meeting New Jersey Department of Transportation's standards for coarse aggregate sizes 3, 4 and 24.
   ii. Where cinder or concrete blocks are laid with core openings exposed, the space between the excavation and seepage pit wall shall be backfilled with at least six inches of two and one-half inch crushed stone or gravel.
   iii. Backfill above the inlet shall be of earth similar to that found at the site which is free from large stones, tree stumps, broken masonry or waste construction material. and shall be thoroughly compacted by hand or mechanical tamping methods. The use of heavy machinery for this purpose is prohibited.

3. Covers shall be constructed of reinforced concrete, shall be a minimum of three inches in thickness, watertight, and shall be designed and constructed so as not to be damaged by any load which is likely to be placed upon them.

4. At least one access opening with a removable, watertight cover and a minimum dimension of 24 inches shall be provided. Access openings shall meet the following requirements:

   i. Access shall be adequate to permit pumping out of the pit as well as inspection and maintenance of the inlet;

   ii. When the cover of the seepage pit is deeper than 12 inches below finished grade, the access opening shall be extended to within 12 inches of finished grade by means of a concrete riser with cast-iron manhole cover;

   iii. When the access opening is below finished grade, a permanent marker at finished grade shall be provided to indicate its location; and

   iv. When the access opening is at or above finished grade, the cover shall be bolted, locked or otherwise secured to prevent access by children.

(d) Requirements for the submission of certifications are as follows:

1. Any facility qualifying for this permit by rule shall submit an as-built certification from a New Jersey licensed professional engineer which certifies that the system was designed and constructed in accordance with the requirements of this section. The certification and a NJPDES-1 form shall be submitted within 30 days of the completion of construction to:

NJDEP
Division of Water Quality
Bureau of Operational Ground Water Permits
CN029
Trenton, New Jersey 08625

7:14A-8: APPENDIX A EQUATION FOR AREA OF REVIEW

Modified Theis Equation for determining the "area of review" based on the assumption outlined in N.J.A.C. 7:14A-8.12

$$r := \frac{(2.25 \cdot K \cdot H \cdot t)^{0.5}}{s \cdot 10 \cdot X}$$

Where

$$X := \frac{4 \cdot \pi \cdot K \cdot H \cdot h_w - h_{bo} \cdot x \cdot S_p \cdot G_b}{2.3 \cdot Q}$$

r = Radius of endangering influence from injection well (length)
K = Hydraulic conductivity of the injection zone (length time)
H = Thickness of the injection zone (length)
t = Time of injection (time)
S = Storage coefficient (dimensionless)
Q = Injection rate (volume/time)
h_{b0} = Observed original hydrostatic head of injection zone (length) measured from the base of the lowest underground source of drinking water
h_w = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water
SpG_b = Specific gravity of fluid in the injection zone (dimensionless)
π = 3.142 (dimensionless)

SUBCHAPTER 9. GROUND WATER MONITORING REQUIREMENTS FOR SANITARY LANDFILLS

7:14A-9.1 SCOPE AND PURPOSE

(a) This subchapter establishes the requirements for conducting ground water monitoring at sanitary landfills, including design of the ground water monitoring system, sampling, parameters and frequency of analyses, evaluation of data, recordkeeping and reporting.

(b) It is essential that the monitoring program provide adequate data over a sufficient period of time to accurately represent conditions and variations of background ground water quality and the hydrologic characteristic of the sanitary landfill. It is essential that the monitoring program be sufficient to ensure protection of ground water resources.

7:14A-9.2 APPLICABILITY

(a) The requirements in this subchapter apply to all sanitary landfills, except as provided at (c), (d) and (e) below.

(b) All sanitary landfills shall obtain a NJPDES DGW permit to conduct ground water monitoring as specified in this subchapter.

(c) Ground water monitoring pursuant to N.J.A.C. 7:14A-9.3 through 9.8 will be suspended for a municipal solid waste landfill (MSWLF) if the owner or operator can demonstrate that there is no potential for migration of any hazardous constituents from the MSWLF to the uppermost aquifer during the active life of the unit and the post-closure care period. This demonstration shall be certified by a qualified ground water scientist and approved by the Department and shall be based upon:

1. Site specific field collected measurements, sampling and analysis of physical, chemical, and biological processes affecting the contaminant fate and transport; and
2. Contaminant fate and transport predictions that maximize contaminant migration and consider impacts on human health and environment.

(d) For a sanitary landfill that is not a MSWLF under 40 CFR Parts 257 and 258, the Department may waive the requirement to sample for the complete list of Appendix A parameters when in detection mode, and for the complete list of the 40 C.F.R. 258 Appendix II parameters when in assessment or corrective monitoring mode. When the Department grants such a waiver, based upon the known characteristics of the waste and leachate quality, the contamination potential of the site, or historical permit conditions, the Department shall provide an alternate list of parameters to be monitored that are consistent with

those factors. All sanitary landfills remain subject to all other requirements of N.J.A.C. 7:14A-9.3 through 9.8.

(e) The Department shall exempt a sanitary landfill from the requirement to obtain or maintain a NJPDES permit to conduct ground water monitoring as required by this subchapter when a ground water monitoring program equivalent to the provisions of this subchapter or 40 C.F.R. 258, whichever is more stringent, is being conducted pursuant to the requirements of the Industrial Site Recovery Act (N.J.S.A. 13:1K-6 et seq., as amended), the Spill Compensation and Control Act (N.J.S.A. 58:10-23.11), or the Procedures for Department Oversight of the Remediation of Contaminated Sites at N.J.A.C. 7:26C.

(f) For the purposes of this subchapter, a "qualified ground water scientist" is a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in ground water hydrology as may be demonstrated by state registration, professional certifications, or completion of accredited university programs that enable the individual to make sound professional judgments regarding ground water monitoring, containment fate transport, and corrective action.

7:14A-9.3 GROUND WATER MONITORING SYSTEM PERFORMANCE STANDARDS

(a) A ground water monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths, to yield ground water samples from the uppermost aquifer that:

1. Represent the quality of background ground water that has not been affected by leakage. A determination of background ground water quality may include sampling of wells that are not hydraulically upgradient of the solid waste facility area where:

   i. Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; or

   ii. Sampling at other wells will provide an indication of background ground water quality that is as representative or more representative than that provided by the upgradient wells; and

2. Represent the quality of ground water passing the relevant point of compliance specified by the Department under N.J.A.C. 7:14A-9.6. The downgradient monitoring system shall be installed at the relevant point of compliance specified by the Department that ensures detection of ground water contamination in the uppermost aquifer. When physical obstacles preclude installation of ground water monitoring wells at the relevant point of compliance, the down-gradient monitoring system may be installed at the closest practicable distance hydraulically down-gradient from the relevant point of compliance specified by the Department that ensures detection of ground water contamination in the uppermost aquifer

(b) The Department shall approve a multiunit ground water monitoring system instead of separate ground water monitoring systems for each MSWLF when the facility has several units, provided the multiunit ground water monitoring system meets the requirement of (a) above and shall be as protective of human health and the environment as individual monitoring systems for each MSWLF, based on the following factors:

1. The number, spacing, and orientation of the sanitary landfills;
2. The hydrogeologic setting;
3. The site history;
4. The engineering design of the sanitary landfills; and
5. The type of waste accepted at the sanitary landfills.

(c) Monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with gravel or sand, where necessary, to enable collection of ground water samples. The annular space (that is, the space between the bore hole and well casing) above the sampling depth shall be sealed to prevent contamination of samples and the ground water. In addition to these general well construction standards, all monitoring wells shall be constructed in accordance with the edition of the Department's "Field Sampling Procedures Manual" applicable at the time of construction, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.

1. The owner or operator of a sanitary landfill shall notify the Department that the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices documentation has been placed in the records maintained by the facility; and
2. The monitoring wells, piezometers, and other measurement, sampling, and analytical devices shall be operated and maintained so that they perform to design specifications for the duration of the monitoring program.

(d) The number, spacing, and depths of monitoring systems shall be:

1. Determined based upon site specific technical information that shall include thorough characterization of:
    i. Aquifer thickness, ground water flow rate, ground water flow direction including seasonal and temporal fluctuations in ground water flow; and
    ii. Saturated and unsaturated geologic strata and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining bed defining the lower boundary of the uppermost aquifer including but not limited to:

thickness, stratigraphy, lithology, hydraulic conductivity, porosity and effective porosity.

(e) The ground water monitoring system shall perform in accordance with the standards established in this section, and shall consist of a minimum of four monitoring wells, placed such that there is one background quality well, and three hydraulically downgradient wells, located in the uppermost aquifer into which a discharge or leak is likely to occur.

(f) In addition to the minimum number of wells stated in (e) above, additional wells may be required in order to satisfy the performance standards for a ground water monitoring system in N.J.A.C. 7:14A-9.3(a). The number and spacing of these additional wells shall be capable of intercepting a contaminant plume emanating from a leachate leak located at the most downgradient edge of the waste area. This spacing shall be determined as specified in (d) above.

(g) The Department shall waive the requirements of (e) and (f) above based upon one of the following:

1. Performance of geophysical methods of analysis such as resistivity/conductivity that indicate or confirm that there are no contaminant leaks, or when there are leaks or discharges, that wells are placed in the most concentrated zones of any and all contaminant plumes emanating from the landfill; or
2. Another acceptable method approved in advance by the Department that demonstrates that the minimum number of monitoring wells is not necessary to indicate whether or not the landfill is leaking. A high quality contaminant transport model is one example of an acceptable method.

(h) The adequacy of the monitoring system shall be certified by a qualified ground water scientist and/or approved by the Department. The certification shall indicate that the performance standards of this section, or of the permit, are met. Within 14 days of this certification, the owner or operator shall notify the Department that the certification has been placed in the records maintained by the facility.

(a) In addition to monitoring requirements specified elsewhere in this subchapter, the following requirements shall apply to installation, maintenance, sampling and closure of monitoring wells:

1. Ground water monitoring wells shall be constructed in accordance with the edition of the Department's "Field Sampling Procedures Manual" applicable at the time of well construction, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.
2. A well permit, as required by N.J.S.A. 58:4A-1 et seq., shall be obtained prior to the installation of any ground water monitoring well. A clear and

accurate record or base map providing any monitoring well location, depth, elevation and achievable pumping rate shall be kept at the facility by the owner or operator and be made available to the Department.

3. Ground water sampling shall be conducted in accordance with the edition of the Department's "Field Sampling Procedures Manual" applicable at the time of well sampling, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.

4. Wells shall be capped to prevent precipitation from entering the well bore hole or introduction of extraneous material and substances into the well which might invalidate analytical results. All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. Wells shall be screened and packed with gravel or sand where necessary to enable sample collection at depths where appropriate. The annular space (that is, the space between the bore hole and well casing) above the sampling depth shall be sealed with a suitable material (for example, cement grout or bentonite slurry) to prevent contamination of samples and ground water.

5. The elevation of the top of the well casing for each ground water monitoring well shall be established and said elevation shall be permanently marked on the well casing. The elevation established shall be in relation to the New Jersey Geodetic Control Survey datum. Each monitoring well casing shall be permanently marked with a number assigned or approved by the Department. This number will typically be the well permit number issued with the permit to construct the well.

7:14A-9.5 GROUND WATER MONITORING PROGRAM REQUIREMENTS FOR SANITARY LANDFILLS

(a) The ground water monitoring program shall include sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of ground water quality at the background and downgradient wells installed in compliance with N.J.A.C. 7:14A-9.3(a). The owner or operator shall notify the Department, pursuant to the NJPDES permit, that the sampling and analysis program documentation has been placed in the operating record and the program shall include procedures and techniques for:

1. Sample collection;

2. Sample preservation and shipment;

3. Analytical procedures;

4. Chain of custody control; and

5. Quality assurance and quality control.

(b) The ground water monitoring program shall include sampling and analytical

methods that are appropriate for ground water sampling and that accurately measure hazardous constituents and other monitoring parameters in ground water samples. Ground water samples shall not be field filtered prior to laboratory analysis.

(c) The sampling procedures and frequency shall be protective of human health and the environment.

(d) Ground water elevations shall be measured in each well immediately prior to purging, each time ground water is sampled. The owner or operator shall determine the rate and direction of ground water flow each time ground water is sampled Ground water elevations in wells which monitor the same area shall be measured within a period of time short enough to avoid temporal variations in ground water flow which could preclude accurate determination of ground water flow rate and direction.

(e) The owner or operator shall establish background ground water quality in a hydraulically upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular ground water monitoring program that applies to the sanitary landfill, as determined pursuant to N.J.A.C. 7:14A-9.7(a) or 9.8(a). Background ground water quality may be established at wells that are not located hydraulically upgradient from the sanitary landfill if it meets the requirements of N.J.A.C. 7:14A-9.3(a)1.

(f) The number of samples collected to establish ground water quality data shall be consistent with the appropriate statistical procedures determined pursuant to (g) below. The sampling procedures shall be those specified under N.J.A.C. 7:14A-9.7(b) for detection monitoring, N.J.A.C. 7:14A-9.8(b) and (d) for assessment monitoring, and N.J.A.C. 7:14A-9.9(b) for corrective measures.

(g) The owner or operator shall specify in the records maintained by the facility one of the following statistical methods to be used in evaluating ground water monitoring data for each hazardous constituent. The statistical test shall be conducted separately for each hazardous constituent in each well. Guidance for selecting and conducting the appropriate tests, and for evaluating the results of the tests is described in detail in Statistical Analysis of Ground Water Monitoring Data At RCRA Facilities—Interim Final Guidance Document, 4/89 (NTIS #PB 89-151-047. EPA/530-SW-89-026).

1. A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between the mean and the background mean levels for each compliance well for each constituent;

2. An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of

contamination. The method shall include estimation and testing of the contrasts between each compliance well's median and the background median levels for each compliance well for each constituent;

3. A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;

4. A control chart approach that gives control limits for each constituent; or

5. Another statistical test method that meets the performance standards of (h) below. The owner or operator shall place a justification for this alternative in the records maintained by the facility and notify the Department, pursuant to the NJPDES permit, of the use of this alternative test. The justification shall demonstrate that the alternative method meets the performance standards of (h) below.

(h) Any statistical method chosen pursuant to (g) above shall comply with the following performance standards, as appropriate:

1. The statistical method used to evaluate ground water monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data must be transformed or a distribution free theory test must be used. If the distributions for the constituents differ, more than one statistical method shall be needed.

2. If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a ground water protection standard, the test shall be done at a type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used the type I experiment wise error rate for each testing period shall be no less than 0.05. However, the type I error of no less than 0.01 for individual well comparison shall be maintained. The performance standard does not apply to tolerance intervals, prediction intervals or control charts.

3. If a control chart approach is used to evaluate ground water monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

4. If a tolerance interval or a prediction interval is used to evaluate ground water monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval shall contain shall be

protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

5. The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit (PQL) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.
6. If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) The owner or operator shall determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular ground water monitoring program that applies to the sanitary landfill, as determined under N.J.A.C. 7:14A-9.7(a) or 9.8(a).

1. In determining whether a statistically significant increase has occurred, the owner or operator shall compare the ground water quality of each parameter or constituent at each monitoring well designated pursuant to N.J.A.C. 7:14A-9.3(a)2 to the background value of that constituent, according to the statistical procedures and performance standards specified at (g) and (h) above.
2. Within a reasonable period of time after completing sampling and analysis, not to exceed 90 days unless otherwise approved by the Department in writing, the owner or operator shall determine whether there has been a statistically significant increase over background at each monitoring well.

7:14A-9.6 RELEVANT POINT OF COMPLIANCE

(a) The relevant point of compliance for a MSWLF shall be no more than 150 meters from the actual disposal area and shall be located on land owned by the owner of the sanitary landfill. In determining the relevant point of compliance, the Department shall consider the following factors:

1. The hydrogeologic characteristics of the facility and the surrounding land;
2. The volume and physical and chemical characteristics of the leachate;
3. The quantity, quality and direction of flow of ground water;
4. The proximity and withdrawal rate of the ground water users;
5. The availability of alternative drinking water supplies; and
6. The existing quality of the ground water, including other sources of

contamination and their cumulative impacts on the ground water, and whether the ground water is currently used or reasonably expected to be used for drinking water.

(b) The relevant point of compliance for sanitary landfills that are not MSWLFs shall be the sanitary landfill property boundary, but when possible, shall be no more than 150 meters from the actual disposal area within the "set back" as defined in N.J.A.C. 7:26-1.6.

7:14A-9.7 LEAK DETECTION MONITORING PROGRAM

(a) Leak detection monitoring is required at sanitary landfills at all ground water monitoring wells installed as part of a ground water monitoring system established pursuant to N.J.A.C. 7:14A-9.3(a)1 and 2. At a minimum, a detection monitoring program shall include the monitoring for the constituents listed in Appendix A to this subchapter, incorporated herein by reference.

1. The Department shall remove any of the Appendix A monitoring parameters for a sanitary landfill if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste contained in the sanitary landfill unit.

2. The Department will establish an alternative list of inorganic indicator parameters for a sanitary landfill, in lieu of some or all of the heavy metals (constituents 1 through 15 in Appendix A to this subchapter), if the alternative parameters provide a reliable indication of inorganic releases from the sanitary landfill to the ground water. In determining alternative parameters, the Department shall consider the following factors:

   i. The types, quantities, and concentrations of constituents in wastes managed at the sanitary landfill;

   ii. The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the sanitary landfill;

   iii. The detectability of indicator parameters, waste constituents and reaction products in the ground water; and

   iv. The concentration or values and coefficients of variation of monitoring parameters or constituents in the ground water background.

(b) The monitoring frequency for all constituents listed in Appendix A to this subchapter, or in the alternative list approved in accordance with (a)2 above, shall be at least semiannual during the active life of the facility (including closure) and the post closure period. A minimum of four independent samples from each well (background and downgradient) shall be collected and analyzed for the Appendix A constituents, or the alternative list approved in accordance

with (a)2 above during the first semiannual sampling event. At least one sample from each well (background and downgradient) shall be collected and analyzed during subsequent semiannual sampling events. The Department will specify an appropriate alternative frequency for repeated sampling and analysis for Appendix A constituents, or the alternative list approved in accordance with (a)2 above during the active life (including closure) and the post closure care period. The alternative frequency during the active life (including closure) shall be no less than annual. The alternative frequency shall be based on consideration of the following factors:

1. The lithology of the aquifer and unsaturated zone;
2. The hydraulic conductivity of the aquifer and unsaturated zone;
3. The ground water flow rates;
4. The minimum distance between upgradient edge of the sanitary landfill and downgradient monitoring well screen (minimum distance of travel), and
5. The resource value of the aquifer.

(c) If the owner or operator of a sanitary landfill determines, pursuant to N.J.A.C. 7:14A-9.5(g), that there is a statistically significant increase over background for one or more of the constituents listed in Appendix A-Part A to this subchapter or in the alternative list approved in accordance with (a)2 above, at any monitoring well at the boundary specified under N.J.A.C. 7:14A-9.3(a)2, the owner or operator shall:

1. Within 14 days of this finding, place a notice in the records maintained by the facility indicating which constituents have shown statistically significant changes from background levels, and notify the Department that this notice was placed in the operating record; and
2. Establish an assessment monitoring program meeting the requirements of N.J.A.C. 7:14A-9.8 within 90 days except as provided at (d) below.
3. The owner or operator may demonstrate that a source other than a sanitary landfill caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground water quality. A report documenting this demonstration shall be certified by a qualified ground water scientist or approved by the Department and be placed in the records maintained by the facility. If a successful demonstration is made and documented the owner or operator may continue detection monitoring as specified in this section. If, after 90 days, a successful demonstration is not made, the owner or operator shall initiate an assessment monitoring program as required in N.J.A.C. 7:14A-9.8.

7:14A-9.8 ASSESSMENT MONITORING PROGRAM

(a) Assessment monitoring is required whenever a statistically significant increase over background has been detected for one or more of the constituents listed in Appendix A to this subchapter or in the alternative list established in accordance with N.J.A.C. 7:14A-9.7(a)2.

(b) Within 90 days of initiating an assessment monitoring program, and annually thereafter, the owner or operator shall sample and analyze the ground water for all constituents identified in 40 C.F.R. 258 Appendix II. A minimum of one sample from each downgradient well shall be collected and analyzed during each sampling event. For any constituent detected in the downgradient wells as a result of the complete 40 C.F.R. 258 Appendix II analysis a minimum of four independent samples from each well (background and downgradient) shall be collected and analyzed to establish background for the constituents. The Department will specify an appropriate subset of wells to be sampled and analyzed for 40 C.F.R. 258 Appendix II constituents during assessment monitoring. The Department will remove any of the 40 C.F.R. 258 Appendix II monitoring parameters for a sanitary landfill if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit.

(c) The Department will specify an appropriate alternate frequency for repeated sampling and analysis for the full set of 40 C.F.R. 258 Appendix II constituents required to be monitored pursuant to (b) above, during the active life (including closure) and post closure care of the unit based on the following factors:

1. The lithology of the aquifer and unsaturated zone;
2. The hydraulic conductivity of the aquifer and unsaturated zone;
3. The ground water flow rate;
4. The minimum distance between upgradient edge of the sanitary landfill and downgradient monitoring well screen (minimum distance of travel);
5. The resource value of the aquifer; and
6. The nature (fate and transport) of any constituents detected.

(d) After obtaining the results from the initial or subsequent sampling required pursuant to (b) above, the owner or operator shall:

1. Within 14 days, place a notice in the records maintained by the facility identifying the 40 C.F.R. 258 Appendix II constituents that have been detected and notify the Department that this notice has been placed in the records maintained by the facility;
2. Within 90 days, and on at least a semiannual basis thereafter, resample all wells installed as part of the ground water monitoring system established

pursuant to N.J.A.C. 7:14A-9.3(a) and conduct analyses for all constituents in Appendix A to this subchapter or in the alternative list established pursuant to N.J.A.C. 7:14A-9.7(a)2, and for those constituents in 40 C.F.R. 258 Appendix II that are detected in response to (b) above and record their concentrations in the records maintained by the facility. At least one sample from each well (background and downgradient) shall be collected and analyzed during these sampling events. The Department will specify an alternative monitoring frequency during the active life (including closure) and the post closure period for the constituents referred to in this paragraph. The alternative frequency for Appendix A constituents or the alternative list established pursuant to N.J.A.C. 7:14A-9.7(a)2 during the active life (including closure) shall be no less than annual. The alternative frequency shall be based on consideration of the factors specified at (c) above;

3. Establish background concentrations for any constituents detected pursuant to (b) or (d) above; and

4. Establish ground water protection standards for all constituents detected pursuant to (b) or (d) above. The ground water protection standards shall be established in accordance with (h) below, or when available, shall be the Ground Water Quality Standards set forth in N.J.A.C. 7:9-6.

(e) If the concentrations of all 40 C.F.R. 258 Appendix II constituents are shown to be at or below background values, using the statistical procedures set forth at N.J.A.C. 7:14A-9.5(g), for two consecutive sampling events, the owner or operator shall notify the Department of this finding and may resume detection monitoring pursuant to N.J.A.C. 7:14A-9.7.

(f) If the concentrations of any 40 C.F.R. 258 Appendix II constituents are above background values, but all concentrations are below the ground water protection standard established pursuant to (h) below using the statistical procedures in N.J.A.C. 7:14A-9.5(g), the owner or operator shall continue assessment monitoring in accordance with this section.

(g) If one or more 40 C.F.R. 258 Appendix II constituents are detected at statistically significant levels above the ground water protection standards established pursuant to (d) 4 above in any sampling event, the owner or operator shall within 14 days of this finding, place a notice in the records maintained by the facility identifying the 40 C.F.R. 258 Appendix II constituents that have exceeded the ground water protection standard and notify the Department and all appropriate local government officials that the notice has been placed in said records.

1. The owner or operator shall also:

   i. Characterize the nature and extent of the release by installing additional monitoring wells as necessary;

ii. Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well in accordance with (d)(2) above;

iii. Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site as indicated by sampling of wells in accordance with this subsection; and

iv. Initiate an assessment of corrective measures as required by N.J.A.C. 7:14A-9.9 within 90 days; or

2. The owner or operator may demonstrate that a source other than a sanitary landfill unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, or natural variation in ground water quality. A report documenting this demonstration shall be certified by a qualified ground water scientist or approved by the Department and placed in the records maintained by the facility. If a successful demonstration is made, the owner or operator shall continue monitoring in accordance with the assessment monitoring program established pursuant to this section, and may resume to detection monitoring if the40 C.F.R. 258 Appendix II constituents are at or below background as specified at (e) above. Until a successful demonstration is made, the owner or operator shall comply with (g) above, including initiating an assessment of corrective measures.

(h) Ground water protection standards for each 40 C.F.R. 258 Appendix II parameter shall be determined according to the criteria in N.J.A.C. 7:9-6 or in accordance with 40 C.F.R. 258.55(h) through (i), whichever is more stringent.

7:14A-9.9 ASSESSMENT OF CORRECTIVE MEASURES.

(a) Within 90 days of finding that any of the constituents listed in 40 C.F.R. 258 Appendix II have been detected at a statistically significant level exceeding the ground water protection standards under N.J.A.C. 7:14A-9.8(h), the owner or operator shall initiate an assessment of corrective measures. Such assessment shall be completed within a reasonable period of time, not to exceed 90 days unless otherwise approved by the Department in writing.

(b) The owner or operator shall continue to monitor in accordance with the assessment monitoring program specified in N.J.A.C. 7:14A-9.8.

(c) The assessment shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy as described under N.J.A.C. 7:14A-9.10, addressing at least the following:

1. The performance, reliability, ease of implementation, and potential

impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

2. The time required to begin and complete the remedy;
3. The costs of remedy implementation; and
4. The institutional requirements such as State or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

(d) The owner or operator shall discuss the results of the corrective measures assessment, prior to the selection of remedy, in a public meeting with interested and affected parties.

7:14A-9.10 SELECTION OF REMEDY

(a) Based on the results of the assessment of corrective measures conducted pursuant to N.J.A.C. 7:14A-9.9, the owner or operator shall select a remedy that, at a minimum, meets the standards listed at (b) below. The owner or operator shall notify the Department, within 14 days of selecting a remedy, that a report describing the selected remedy has been placed in the records maintained by the facility and how it meets the standards in (b) below.

(b) Remedies shall:

1. Be protective of human health and the environment;
2. Attain the ground water protection standard specified pursuant to N.J.A.C. 7:14A-9.8(h);
3. Control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of 40 C.F.R. 258 Appendix II constituents into the environment that may pose a threat to human health or the environment;
4. Comply with standards for management of wastes specified in N.J.A.C. 7:14A-9.11(d); and
5. Be implemented in accordance with provisions in the solid waste facility permit, or the closure plan approval issued in accordance with N.J.A.C. 7:26.

(c) In selecting a remedy that meets the standards of (b) above, the owner or operator shall consider the following factors:

1. The long and short term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on:
   i. The magnitude of reduction of existing risks;

ii. The magnitude of residual risks in terms of likelihood of other releases due to waste remaining following implementation of a remedy:

iii. The type and degree of long term management required, including monitoring, operation, and maintenance;

iv. The short term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threat to human health and the environment associated with excavation, transportation, and redisposal or containment;

v. The time until full protection is achieved;

vi. The potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment;

vii. The long term reliability of the engineering and institutional controls; and

viii. The potential need for replacement of the remedy.

2. The effectiveness of the remedy in controlling the source to reduce further releases based on:

i. The extent to which containment practices will reduce further releases; and

ii. The extent to which treatment technologies may be used.

3. The ease or difficulty of implementing a potential remedy(s) based on:

i. The degree of difficulty associated with constructing the technology;

ii. The expected operational reliability of the technology;

iii. The need to coordinate with and obtain necessary approvals and permits from other agencies;

iv. The availability of necessary equipment and specialists; and

v. The available capacity and location of needed treatment, storage, and disposal services.

4. The practicable capability of the owner or operator, including a consideration of the technical and economic capability.

5. The degree to which community concerns are addressed by a potential remedy(s).

(d) The owner or operator shall specify as part of the selected remedy a schedule(s) for initiating and completing remedial activities. Such a schedule shall specify

the initiation of remedial activities within a reasonable period of time, not to exceed 90 days unless otherwise approved by the Department in writing, taking into consideration the factors set forth in (d) (1)-(8) below:

1. The extent and nature of contamination;
2. The practical capabilities of remedial technologies in achieving compliance with ground water protection standards established under N.J.A.C. 7:14A-9.8(g) or (h) and other objectives of the remedy;
3. The availability of treatment or disposal capacity for wastes managed during implementation of the remedy;
4. The desirability of utilizing technologies that are not currently available, but which may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;
5. The potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;
6. The resource value of the aquifer including:
    i. Current and future uses;
    ii. The proximity and withdrawal rate of users;
    iii. Ground water quantity and quality;
    iv. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituent;
    v. The hydrogeologic characteristic of the facility and surrounding land;
    vi. Ground water removal and treatment costs; and
    vii. The cost and availability of alternative water supplies;
7. The practicable capability of the owner or operator; and
8. Other relevant factors.

(e) The Department shall determine that remediation of a release of a 40 CFR 258 Appendix II constituent from a sanitary landfill is not necessary if the owner or operator demonstrates to the satisfaction of the Department that:

1. The ground water is additionally contaminated by substances that have originated from a source other than a sanitary landfill and those substances are present in concentrations such that cleanup of the release from the sanitary landfill would provide no significant reduction in risk to actual or potential receptors;
2. The constituent(s) is present in ground water that:
    i. Is not currently or reasonable expected to be a source of drinking water; and

ii. Is not hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in a concentration(s) that would exceed the ground water protection standards established under N.J.A.C. 7:14A-9.8(h);

3. Remediation of the release(s) is technically impracticable; or

4. Remediation results in unacceptable cross-media impacts.

(f) A determination by the Department pursuant to (e) above shall not affect the authority of the State to require the owner or operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the ground water, to prevent exposure to the ground water, or to remediate the ground water to concentrations that are technically practicable and significantly reduce threats to human health or the environment.

(g) When ground water contamination is known to have migrated outside the sanitary landfill boundary, the sanitary landfill shall request to conduct a cleanup in accordance with the Procedures for Department Oversight of the Remediation of Contaminated Sites at N.J.A.C. 7:26C within 90 days unless it can be demonstrated that a source other than the MSWLF caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground water quality. A report documenting this demonstration shall be certified by a qualified ground water scientist or approved by the Department and placed in the records maintained by the facility.

7:14A-9.11 IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

(a) Based on the schedule established under N.J.A.C. 7:14A-9.10(d) for initiation and completion of remedial activities, the owner/operator shall:

1. Establish and implement a corrective action ground water monitoring program that:

i. At a minimum, meets the requirements of an assessment monitoring program under N.J.A.C. 7:14A-9.8;

ii. Indicates the effectiveness of the corrective action remedy; and

iii. Demonstrates compliance with ground water protection standards pursuant to (e) below;

2. Implement the corrective action remedy selected under N.J.A.C. 7:14A-9.10; and

3. Take any interim measures necessary to ensure the protection of human health and the environment. Interim measures shall, to the greatest extent practicable, be consistent with the objectives of and contribute to the

permanence of any remedy that may be required pursuant to N.J.A.C. 7:14A-9.10. The following factors shall be considered by an owner or operator in determining whether interim measures are necessary:

i. The time required to develop and implement a final remedy;

ii. The actual or potential exposure of nearby populations or environmental receptors to hazardous constituents;

iii. The actual or potential contamination of drinking water supplies or sensitive ecosystems;

iv. The further degradation of the ground water that may occur if remedial action is not initiated expeditiously;

v. Weather conditions that may cause hazardous constituents to migrate or be released;

vi. The risks of fire or explosion, or potential for exposure to hazardous constituents as a result of an accident or failure of a container or handling system; and

vii. Other situations that may pose threats to human health and the environment.

(b) An owner or operator may determine, based on information developed after implementation of the remedy has begun or other information, that compliance with N.J.A.C. 7:14A-9.10(b) is not being achieved through the remedy selected. In such a case, the owner or operator shall implement other methods or techniques that could practicably achieve compliance with the requirements, unless the owner or operator makes the determination under (c) below.

(c) If the owner or operator determines that compliance with N.J.A.C. 7:14A-9.10(b) cannot be practically achieved with any currently available methods, the owner or operator shall:

1. Obtain certification of a qualified ground water scientist or approval by the Department that compliance with N.J.A.C. 7:14A-9.10(b) cannot be practically achieved with any currently available methods;

2. Implement alternate measures to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment;

3. Implement alternate measures for control of the sources of contamination, or for removal or decontamination of equipment, units, devices, or structures that are:

i. Technically practicable; and

ii. Consistent with the overall objective of the remedy; and

4. Notify the Department within 14 days that a report justifying the

alternative measures prior to implementing such alternative measures has been placed in the records maintained by the facility.

(d) All solid wastes that are managed pursuant to a remedy required under N.J.A.C. 7:14A-9.10, or an interim measure required under (a)3 above, shall be managed in a manner that:

1. Is protective of human health and the environment; and
2. Complies with applicable RCRA requirements.

(e) Remedies selected pursuant to N.J.A.C. 7:14A-9.10 shall be considered complete when:

1. The owner or operator complies with the ground water protection standards established under N.J.A.C. 7:14A-9.8(h) at all points within the plume of contamination that lie beyond the ground water monitoring well system established pursuant to N.J.A.C. 7:14A-9.3(a);
2. Compliance with the ground water protection standards established under N.J.A.C. 7:14A-9.8(h) has been achieved by demonstrating that concentrations of 40 C.F.R. 258 Appendix II constituents have not exceeded the ground water protection standard(s) for a period of three consecutive years using the statistical procedures and performance standards in N.J.A.C. 7:14A-9.5(g) and (h). The Department will specify an alternative length of time during which the owner or operator shall demonstrate that concentrations of 40 C.F.R. 258 Appendix II constituents have not exceeded the ground water protection standard(s) taking into consideration:
    i. Extent and concentration of the release(s);
    ii. Behavior characteristics of the hazardous constituents in the ground water
    iii. Accuracy of monitoring or modeling techniques, including any seasonal, meteorological, or other environmental variabilities that may affect the accuracy; and
    iv. Characteristics of the ground water; and
3. All actions required to complete the remedy have been satisfied.

(f) Upon completion of the remedy, the owner or operator shall notify the Department within 14 days that a certification that the remedy has been completed in compliance with the requirements of N.J.A.C. 7:14A-9.11(e) has been placed in the records maintained by the facility. The certification shall be signed by the owner or operator and by a qualified ground water scientist or approved by the Department.

(g) When, upon completion of the certification, the owner or operator determines

that the corrective action remedy has been completed in accordance with the requirements of (e) above, the owner or operator shall be released from the requirements for financial assurance for corrective action under 40 CFR 258.73.

7:14A-9.12 APPLICATION REQUIREMENTS FOR NJPDES-DGW PERMITS FOR SANITARY LANDFILLS

(a) In addition to the information required pursuant to N.J.A.C. 7:14A-4.3, an applicant for a NJPDES-DGW sanitary landfill monitoring permit shall ensure that the Department has in its possession maps, cross sections and reports as follows. Maps may be combined if all required features are clearly shown.

1. A location map:

   i. The site shall be located on a U.S. Geological Survey 7.5 minute series Topographic Quadrangle. The quadrangle shall be the most recent revision.

   ii. The site shall be shown by legal boundaries surveyed by a New Jersey licensed land surveyor indicating roadways, adjacent property ownerships and all inhabited structures and facilities within one half mile of site boundaries.

2. A topographic map(s):

   i. The topographic map of the facility shall have a horizontal scale of at least one inch equals 200 feet and a contour interval of five feet. Contour elevations shall be based on established N.J. Geological Control Survey Datum and the map shall be keyed into the New Jersey State plane coordinate systems. The topographic map(s) shall indicate original, existing, and proposed topography.

   ii. An additional topographic map shall indicate all surface waters within one-half mile of the sanitary landfill site and all water supply reservoirs and public recreational bodies of water within one mile of the landfill boundary;

3. A ground water supply map showing the depth and location of wells within one-half mile radius and all public supply wells or wells permitted to pump over 100,000 gallons per day or 70 gallons per minute within 1½ miles of the proposed sanitary landfill shall be plotted. Pump capacity or diversion allocation for all wells yielding greater than 70 gallons per minute shall be reported and keyed to the map. All occupied buildings, including private dwellings, within one-half mile radius of the proposed sanitary landfill facility shall be plotted and identified as to type (for example, industrial, commercial, or residential). The service areas, if any, of municipal or community water supply systems shall be identified;

4. A detailed geologic map of the entire site, including all the area outside the

sanitary landfill site boundary to a distance of one-half mile. The base data for this map shall be compiled by a geologist. The scale of the geologic map shall be at least one inch equals 400 feet and shall show the following information:

i. Bedrock outcrops;

ii. Dip and strike of sedimentary formations and foliation trends and dip angles of igneous and metamorphic rocks;

iii. Fault(s) and prominent shear zone(s) trends;

iv. Joint or fracture trends in bedrock outcrops including dip angles;

v. The trend direction of solution channels in carbonate rocks and sink holes;

vi. The location of any active or abandoned mine workings; and

vii. A geologic report describing the major characteristics of the formation(s), including thickness, lithology, structural features, degree of weathering, and amount of overburden;

5. Geologic cross-section(s) and fence diagrams, preferably in three dimensions, showing the spatial relationship of the sanitary landfill, the geology, the monitoring wells, any other engineered site improvements, or other significant features that influence the interpretation of analytical results and explanations;

6. Soils map and borings:

i. A soils map shall be submitted with a scale of at least one inch equals 400 feet. Soils information should be drawn from the U.S.D.A. Soil Conservation Service Report(s) with site specific soils data determined by a soil scientist using the U.S.D.A. textural classification system on data obtained from the required borings and other available data.

ii. A sufficient number of borings necessary to determine soil characteristics, depth to bedrock (where applicable), permeability and ground water elevations shall be drilled. Where, in the judgment of the Department, submitted information is insufficient to adequately evaluate the site, additional and/or deeper borings, supplemented by excavations, test pits or geophysical methods will be required.

(1) Subsurface data obtained by borings shall be collected by split spoon drive method, shelby tube or diamond bit coring. Auger borings are not acceptable.

(2) All borings shall be a minimum depth of 10 feet below the seasonally high water table. In no case shall borings be less than 20 feet below the lowest elevation by the sanitary landfill.

(3) Split spoon, shelby tube and diamond bit core samples shall be labeled and properly stored for a minimum period of one year from the date of the permit application.

(4) Profiles shall be shown for each boring giving the depths and texture of each soil stratum or horizon and the elevation of any ground water or aquifer encountered, and shall include the date each boring was taken;

7. A hydrogeologic report shall be provided for the site and for a one-half mile radius of the proposed site. The hydrogeologic report shall include:

   i. A piezometric map based upon stabilized ground water elevations below the site showing direction(s) and rate(s) of ground water flow and an indication as to whether the ground water is unconfined, confined (artesian) or both for the proposed sanitary landfill;

   ii. A generalized piezometric map based upon available data including, but not limited to, existing topography, surface drainage and existing well data, shall be provided for the area within one-half mile radius of the site boundary;

   iii. A survey of wells identified on the ground water supply map prepared pursuant to (b)3 above including the use, approximate yield, and depth of each well; and

   iv. All public water supplies and wells capable of pumping over 70 gallons per minute or 100,000 gallons per day within a 1 ½ mile radius of the sanitary landfill, including an assessment of the potential impact on those supplies by the sanitary landfill;

8. Maps showing the location of all existing and proposed ground water monitor wells; and

9. Results of leachate generation calculations provided by performing a water balance calculation such as the Hydrologic Evaluation of Landfill Performance (HELP) Model, EPA/600/9-94/xxx, U.S. Environmental Protection Agency Risk Reduction Engineering Laboratory, Cincinnati, OH.

10. Leachate generation calculations shall be provided by performing a water balance calculation.

N.J.A.C. 7:14A-9 UNOFFICIAL VERSION. **The Official Version can be obtained from West Publishing, 1-800-808-WEST**

7:14A-9 APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING

Part A Parameters: Inorganic Constituents

Number	Common Name[1]	CAS RN[2]
1	Antimony	(Total)
2	Arsenic	(Total)
3	Barium	(Total)
4	Beryllium	(Total)
5	Cadmium	(Total)
6	Chromium	(Total)
7	Cobalt	(Total)
8	Copper	(Total)
9	Lead	(Total)
10	Nickel	(Total)
11	Selenium	(Total)
12	Silver	(Total)
13	Thallium	(Total)
14	Vanadium	(Total)
15	Zinc	(Total)

Organic Constituents

16	Acetone	67-64-1
17	Acrylonitrile	107-13-1
18	Benzene	71-43-2
19	Bromochloromethane	74-97-5
20	Bromodichloromethane	75-27-4
21	Bromoform; Tribromomethane	75-25-2
22	Carbon disulfide	75-15-0
23	Carbon tetrachloride	56-23-5
24	Chlorobenzene	108-90-7
25	Chloroethane; Ethyl chloride	75-00-3
26	Chloroform; Trichloromethane	67-66-3
27	Dibromochloromethane; Chlorodibromomethane	124-48-1
28	1,2-Dibromo-3-chloropropane; DBCP	96-12-8
29	1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
30	o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
31	p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
32	trans-1,4-Dichloro-2-butene	110-57-6
33	1,1-Dichloroethane; Ethylidene chloride	75-34-3
34	1,2-Dichloroethane; Ethylene dichloride	107-06-2
35	1,1-Dichloroethylene; 1,1-Dichloroethene Vinylidene chloride	75-35-4
36	cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
37	trans-1,2-Dicloroethylene; trans-1,2-Dichloroethene	156-60-5
38	1,2-Dichloropropane; Propylene dichloride	78-87-5
39	cis-1,3-Dichloropropene	10061-01-5
40	trans-1,3-Dichloropropene	10061-02-6
41	Ethylbenzene	100-41-4
42	2-Hexanone; Methyl butyl ketone	591-78-6
43	Methyl bromide; Bromomethane	74-83-9
44	Methyl chloride; Chloromethane	74-87-3
45	Methylene bromide; Dibromomethane	74-95-3
46	Methylene chloride; Dichloromethane	75-09-2
47	Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
48	Methyl iodide; Iodomethane	74-88-4
49	4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
50	Styrene	100-42-5
51	1,1,1,2-Tetrachloroethane	630-20-6
52	1,1,2,2-Tetrachloroethane	79-34-5
53	Tetrachloroethylene; Tetrachloroethene; Per- chloroethylene.127-18-4	127-18-4
54	Toluene	108-88-3
55	1,1,1-Trichloroethane; Methylchloroform	71-55-6
56	1,1,2-Trichloroethane	79-00-5
57	Trichloroethylene; Trichloroethene	79-01-6
58	Trichloro-fluoromethane; CFC-11	75-69-4
59	1,2,3,-Trichloropropane	96-18-4
60	Vinyl accetate	108-05-4
61	Vinyl chloride	75-01-4
62	Xylenes	1330-20-7

Part B Parameters

Ammonia (as N)	
Nitrate (as N)	
Total Dissolved Solids (TDS)	
Conductivity	

[1] This list contains 47 volatile organics for which possible analytical procedures provided in EPA Report SW-846 'Test Methods for Evaluating Solid Waste,' third edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods. Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[2] Chemical Abstracts Service registry number. Where 'Total' is entered, all species in the ground water that contain this element are included.

SUBCHAPTER 10. GROUND WATER MONITORING REQUIREMENTS FOR HAZARDOUS WASTE FACILITIES

7:14A-10.1 SCOPE AND PURPOSE

(a) This subchapter establishes the requirements for conducting ground water monitoring at hazardous waste facilities, as required by N.J.A.C. 7:26G and 40 C.F.R. Parts 264 and 265, including design of the ground water monitoring system, sampling, parameters and frequency of analyses, evaluation of data, recordkeeping, and reporting.

(b) It is essential that the monitoring program provide adequate data over a sufficient period of time to accurately represent conditions and variations of background ground water quality and the hydrologic characteristic of the hazardous waste facility site area. It is essential that the monitoring program be sufficient to ensure protection of ground water resources.

7:14A-10.2 APPLICABILITY

(a) The requirements in this subchapter apply to:

1. Hazardous waste facilities as defined by N.J.A.C. 7:26G-8 through 7:26G-9.

(b) All hazardous waste facilities shall obtain a NJPDES-DGW permit to conduct ground water monitoring as specified in this subchapter.

7:14A-10.3 EXEMPTIONS

(a) The owner or operator of a hazardous waste facility unit or units is not subject to regulation for releases into the uppermost aquifer under this subchapter if:

1. The owner or operator is exempt pursuant to the rules governing hazardous waste facilities in N.J.A.C. 7:26G-8 through 9.

7:14A-10.4 GENERAL GROUND WATER MONITORING WELL REQUIREMENTS

(a) In addition to monitoring requirements specified elsewhere in this subchapter, all of the following requirements apply to the installation, maintenance, sampling and closure of monitoring wells.

1. Ground water monitoring wells shall be constructed in accordance with the edition of the Department's "Field Sampling Procedures Manual" applicable at the time of well construction, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.

2. A well permit, as required by N.J.S.A. 58:4A-1 et seq., shall be obtained prior to the installation of any ground water monitoring well. A clear and accurate record or base map providing the monitoring well location, depth,

elevation and achievable pumping rate shall be kept at the facility by the owner or operator and made available to the Department.

3. Ground water sampling and analysis shall be conducted in accordance with the edition of the Department's "Field Sampling Procedures Manual" applicable at the time of sampling, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.

4. Wells shall be capped to prevent precipitation from entering the well bore hole or introduction of extraneous material and substances into the well which might invalidate analytical results. All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. Wells shall be screened and packed with gravel or sand where necessary to enable sample collection at depths where appropriate. The annular space (that is, the space between the bore hole and well casing) above the sampling depth shall be sealed with a suitable material (for example, cement grout or bentonite slurry) to prevent contamination of samples and ground water.

5. The elevation of the top of the well casing for each ground water monitoring well shall be established and said elevation shall be permanently marked on the well casing. The elevation established shall be in relation to the New Jersey Geodetic Control Survey datum. Each monitoring well casing shall be permanently marked with a number to be assigned or approved by the Department. This will typically be the well permit number issued with the permit to construct the well.

7:14A-10.5 GROUND WATER MONITORING PROGRAM REQUIREMENTS FOR HAZARDOUS WASTE FACILITIES

(a) Any owner or operator subject to this subchapter shall conduct a monitoring program as follows:

1. Whenever any hazardous constituent pursuant N.J.A.C. 7:14A-10.7 from a hazardous waste facility unit is detected at a compliance point established pursuant to N.J.A.C. 7:14A-10.9, the owner or operator shall institute a compliance monitoring program under N.J.A.C. 7:14A-10.13. “Detected” is defined as statistically significant evidence of contamination as described in N.J.A.C. 7:14A-10.12(f);

2. Whenever the ground water protection standard under N.J.A.C. 7:14A-10.6 is exceeded, the owner or operator shall institute a corrective action program under N.J.A.C. 7:14A-10.14. “Exceeded” is defined as statistically significant evidence of increased contamination as described in N.J.A.C. 7:14A-10.13(d);

   i. Whenever hazardous constituents under N.J.A.C. 7:14A-10.7 from a hazardous waste facility unit exceed concentration limits under N.J.A.C. 7:14A-10.8 in ground water between the relevant point of

compliance under N.J.A.C. 7:14A-10.9 and the downgradient hazardous waste facility property boundary, the owner or operator shall institute a corrective action program under N.J.A.C. 7:14A-10.14; or

ii. In all other cases, the owner or operator shall institute a detection monitoring program under N.J.A.C. 7:14A-10.11.

(b) The Department shall specify in the NJPDES-DGW permit the specific elements of the monitoring and response program. The Department may include one or more of the programs identified in (a) above in the NJPDES-DGW permit as may be necessary to protect human health and the environment and shall specify the circumstances under which each of the programs will be required. In deciding whether to require the owner or operator to institute a particular program, the Department shall consider the potential adverse effects on human health and the environment that might occur before final administrative action on a permit modification application to incorporate such a program could be taken.

7:14A-10.6 GROUND WATER PROTECTION STANDARD

The owner or operator shall comply with conditions specified in the NJPDES-DGW permit that are designed to ensure that hazardous constituents under N.J.A.C. 7:14A-10.7 detected in the ground water from a hazardous waste facility unit do not exceed the concentration limits under N.J.A.C. 7:9-6 or 7:14A-10.8 in the uppermost aquifer underlying the hazardous waste facility area beyond the relevant point of compliance under N.J.A.C. 7:14A-10.9 during the compliance period under N.J.A.C. 7:14A-10.10. The Department shall establish this ground water protection standard in the NJPDES-DGW permit when hazardous constituents have been detected in the ground water.

7:14A-10.7 HAZARDOUS CONSTITUENTS

(a) The Department shall specify in the NJPDES-DGW permit the hazardous constituents to which the ground water protection standard of N.J.A.C. 7:14A-10.6 applies. Hazardous constituents are constituents identified in 40 CFR Part 261 Appendix VIII that have been detected in ground water in the uppermost aquifer under lying a hazardous waste facility unit and that are reasonably expected to be in or derived from waste contained in a hazardous waste facility unit, unless the Department has excluded them under (b) below.

(b) The Department shall exclude a 40 CFR Part 261 Appendix VIII constituent from the list of hazardous constituents specified in the NJPDES-DGW permit if it finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment based on the following:

1. Potential adverse effects on ground water quality, considering:

i. The physical and chemical characteristics of the waste in the hazardous waste facility unit, including its potential for migration;

ii. The hydrogeological characteristics of the facility and surrounding land;

iii. The quantity of ground water and the direction of ground water flow:

iv. The proximity and withdrawal rates of ground water users;

v. The current and future uses of ground water in the area;

vi. The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water quality;

vii. The potential for health risks caused by human exposure to waste constituents;

viii. The potential damage to wild life, crops, vegetation, and physical structures caused by exposure to waste constituents; and

ix. The persistence and permanence of the potential adverse effects;

2. Potential adverse effects on hydraulically connected surface water quality, considering:

i. The volume and physical and chemical characteristics of the waste in the hazardous waste facility unit;

ii. The hydrogeological characteristics of the facility and surrounding land;

iii. The quantity and quality of ground water, and the direction of ground water flow;

iv. The patterns of rainfall in the region;

v. The proximity of the hazardous waste facility unit to surface waters;

vi. The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

vii. The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

viii. The potential for health risks caused by human exposure to waste constituents;

ix. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

x. The persistence and permanence of the potential adverse effects.

(c) In making any determination under (b) above, the Department shall assess any identified underground sources of drinking water.

7:14A-10.8 CONCENTRATION LIMITS

(a) The Department shall specify in the NJPDES-DGW permit concentration limits in the ground water for hazardous constituents established under N.J.A.C. 7:14A-10.7. The concentration of a hazardous constituent:

1. Shall not exceed the background level of that constituent in the ground water at the time that limit is specified in the permit;

2. For any of the constituents listed in (a)2i below, shall not exceed the ground water quality criteria of N.J.A.C. 7:9-6, or the 40 CFR 264.93 Table 1 concentration, whichever is more stringent, if the background level of the constituent is below the more stringent of the relevant concentration limits for those parameters; or

   i. The following constitutents shall be evaluated in accordance with (a)2 above: arsenic, silver, barium, endrin, cadmium, lindane, chromium, methoxychlor, lead, toxaphene, mercury, 2, 4-D, selenium, 2, 4, 5-TP Silvex; or

3. Shall not exceed an alternate limit established by the Department under (b) below.

(b) The Department shall establish an alternate concentration limit for a hazardous constituent if it finds that the constituent shall not pose a substantial present or potential hazard to human health or the environment if such alternate concentration limit is not exceeded, based on the following:

1. Potential adverse effects on ground water quality, considering:

   i. The physical and chemical characteristics of the waste in the hazardous waste facility unit, including its potential for migration;

   ii. The hydrogeological characteristics of the facility and surrounding land;

   iii. The quantity of ground water and the direction of ground water flow;

   iv. The proximity and withdrawal rates of ground water users;

   v. The current and future uses of ground water in the area;

   vi. The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water quality;

   vii. The potential for health risks caused by human exposure to waste constituents;

   viii. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure. to waste constituents; and

   ix. The persistence and permanence of the potential adverse effects;

2. Potential adverse effects on hydraulically connected surface water quality, considering:

   i. The volume and physical and chemical characteristics of the waste in the hazardous waste facility unit;

   ii. The hydrogeological characteristics of the facility and surrounding land;

   iii. The quantity and quality of ground water, and the direction of ground water flow;

   iv. The patterns of rainfall in the region;

   v. The proximity of the hazardous waste facility unit to surface waters;

   vi. The current and future uses of for those surface waters in the area and any water quality standards established for those surface waters;

   vii. The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

   viii. The potential for health risks caused by human exposure to waste constituents;

   ix. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

   x. The persistence and permanence of the potential adverse effects.

(c) In making any determination under (b) above, the Department shall assess any identified underground sources of drinking water.

7:14A-10.9 RELEVANT POINT OF COMPLIANCE

(a) The Department shall specify in the NJPDES-DGW permit the relevant point of compliance at which the ground water protection standard of N.J.A.C. 7:14A-10.6 applies and at which monitoring shall be conducted. The relevant point of compliance is a vertical surface located at the hydraulically downgradient limit of the hazardous waste facility unit (unit) that extends down into the uppermost aquifer underlying the hazardous waste facility unit(s).

(b) The hazardous waste management unit is the limit projected in the horizontal plane of the area on which hazardous waste shall be placed during the active life of a hazardous waste facility unit.

1. The hazardous waste management unit includes horizontal space taken up by any liner, dike, or other barrier designed to contain hazardous waste in a hazardous waste facility unit.

2. If the facility contains more than one hazardous waste facility unit, the hazardous waste management unit is described by an imaginary line

circumscribing the several hazardous waste facility units.

(c) Unless otherwise determined by the Department, the relevant point of compliance specified shall be no more than 150 meters from the hazardous waste management unit boundary and shall be located on land owned by the owner of the hazardous waste facility. In determining the relevant point of compliance, the Department shall consider the following factors:

1. The hydrogeologic characteristics of the facility and the surrounding land;
2. The volume and physical and chemical characteristics of the leachate;
3. The quantity, quality and direction of flow of ground water;
4. The proximity and withdrawal rate of the ground water users;
5. The availability of alternative drinking water supplies; and
6. The existing quality of the ground water, including other sources of contamination and their cumulative impacts on the ground water, and whether the ground water is currently used or reasonably expected to be used for drinking water.

7:14A-10.10 COMPLIANCE PERIOD

(a) The Department shall specify in the NJPDES-DGW permit the compliance period during which the ground water protection standard of N.J.A.C. 7:14A-10.6 applies. The compliance period is the number of years equal to the active life of the hazardous waste management unit in N.J.A.C. 7:14A-10.9(b) (including any hazardous waste management activity prior to permitting and the closure period.)

(b) The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of N.J.A.C. 7:14A-10.13.

(c) If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in (a) above, the compliance period is extended until the owner or operator can demonstrate that the ground water protection standard of N.J.A.C. 7:14A-10.6 has not been exceeded for a period of three consecutive years.

7:14A-10.11 GROUND WATER MONITORING SYSTEM PERFORMANCE STANDARDS

(a) The owner or operator shall comply with the following requirements for any ground water monitoring program developed to satisfy N.J.A.C. 7:14A-10.12, 10.13 or 10.14. A ground water monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths to yield ground water samples from the upper most aquifer that:

1. Represent the quality of background water that has not been affected by leakage from a hazardous waste facility unit.

    i. A determination of background ground water quality may include sampling of wells that are not hydraulically upgradient of the hazardous waste management area as described at N.J.A.C. 7:14A-10.9(b), where:

        (1) Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; and

        (2) Sampling at other wells will provide an indication of background ground water quality that is representative or more representative than that provided by the upgradient wells;

2. Represent the quality of ground water passing the relevant point of compliance; and

3. Allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the hazardous waste management area to the uppermost aquifer.

(b) If a facility contains more than one hazardous waste facility unit, separate ground water monitoring systems are not required for each hazardous waste facility unit provided that provisions for sampling the ground water in the uppermost aquifer will enable detection and measurement at the relevant point of compliance of hazardous constituents from the hazardous waste facility units that have entered the ground water in the uppermost aquifer.

(c) Monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with gravel or sand, where necessary, to enable collection of ground water samples. The annular space (that is, the space between the bore hole and well casing) above the sampling depth shall be sealed to prevent contamination of samples and the ground water. In addition to these general well construction standards, all monitoring wells shall be constructed in accordance with the edition of the Department's "Field Sampling Procedures Manual" applicable at the time of construction, an alternate method approved by the Department, or as set forth in the NJPDES-DGW permit.

(d) The ground water monitoring system shall include sampling and analysis procedures that are designed to ensure monitoring results that provide a reliable indication of ground water quality below the hazardous waste management area as described at N.J.A.C. 7:14A-10.9(b). At a minimum, the program shall include procedures and techniques for:

1. Sample collection;

2. Sample preservation and shipment;

3. Analytical procedures; and

4. Chain of custody control.

(e) The ground water monitoring system shall include sampling and analytical methods that are appropriate for ground water sampling and that accurately measure hazardous constituents in ground water samples.

(f) The ground water monitoring system shall include a determination of the ground water surface elevation each time ground water is sampled.

(g) In detection monitoring or, where appropriate, in compliance monitoring, data on each hazardous constituent specified in the permit shall be collected from background wells and wells at the compliance point(s). The number and kinds of samples collected to establish background shall be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size shall be as large as necessary to ensure with reasonable confidence that a contaminant release to ground water from a facility will be detected. The owner or operator shall determine an appropriate sampling procedure and interval for each hazardous constituent listed in the NJPDES-DGW permit which shall be specified in the NJPDES-DGW permit upon approval by the Department. This sampling procedure shall be:

1. A sequence of at least four samples, taken at an interval that ensures, to the greatest extent technically feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport characteristics of the potential contaminants, or

2. An alternate sampling procedure approved by the Department.

(h) The owner or operator shall specify one of the following statistical methods to be used in evaluating ground water monitoring data for each hazardous constituent which, upon approval by the Department, shall be specified in the NJPDES-DGW permit. The statistical test shall be conducted separately for each hazardous constituent in each well. Where practical quantification limits (PQLs) are used in any of the following statistical procedures to comply with (i)5 below, the PQL shall be approved by the Department. Use of any of the following statistical methods shall be protective of human health and the environment and shall comply with the performance standards in (i) below.

1. A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between the mean and the background mean levels for each compliance well for each constituent;

2. An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of

contamination. The method shall include estimation and testing of the contrasts between the median and the background median levels for each compliance well for each constituent;

3. A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;

4. A control chart approach that gives control limits for each constituent; or

5. Another statistical test method approved by the Department.

(i) Any statistical method chosen pursuant to (h) above shall comply with the following performance standards, as appropriate:

1. The statistical method used to evaluate ground water monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data must be transformed or a distribution free theory test must be used. If the distribution for the constituents differ, more than one statistical method shall be needed.

2. If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentration or a ground water protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experimentwise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparison shall be maintained. This performance standard does not apply to tolerance intervals, prediction intervals or control charts.

3. If a control chart approach is used to evaluate ground water monitoring data, the specific type of control chart and its associated parameter values shall be proposed by the owner or operator and approved by the Department if it finds it to be protective of human health and the environment.

4. If a tolerance interval or a prediction interval is used to evaluate ground water monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval shall contain, shall be proposed by the owner or operator and approved by the Department if it finds these parameters to be protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

5. The statistical method shall account for data below the limit of detection

with one or more statistical procedures that are protective of human health and the environment. Any practical quantification limit (PQL) approved by the Department under (h) above that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

6. If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(j) Ground water monitoring data collected in accordance with (g) above, including actual levels of constituents, shall be maintained in the permanent records maintained by the facility. The Department shall specify in the permit when the data shall be submitted for review.

7:14A-10.12 LEAK DETECTION MONITORING PROGRAM

(a) An owner or operator required to establish a leak detection monitoring program under this subchapter shall monitor for indicator parameters (for example, specific conductance, total organic carbon, or total organic halogen), or waste constituents or reaction products that provide a reliable indication of the presence of hazardous constituents in ground water. The Department shall specify the parameters or constituents to be monitored in the NJPDES-DGW permit, based on the following factors:

1. The types, quantities, and concentrations of constituents in wastes managed at the hazardous waste facility unit;
2. The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the hazardous waste facility unit;
3. The detectability of indicator parameters, waste constituents, and reaction products in ground water; and
4. The concentrations or values and coefficients of variation of proposed monitoring parameters or constituents in the ground water background.

(b) The owner or operator shall install a ground water monitoring system at the relevant point of compliance specified under N.J.A.C. 7:14A-10.9. The ground water monitoring system shall comply with N.J.A.C. 7:14A-10.11(a), (b) and (c).

(c) The owner or operator shall conduct a ground water monitoring system for each chemical parameter and hazardous constituent specified in the permit pursuant to (a) above in accordance with N.J.A.C. 7:14A-10.11(g). The owner or operator shall maintain a complete and continuous record of ground water analytical data as measured and in a form necessary for the determination of

statistical significance under N.J.A.C. 7:14A-10.11(h).

(d) The Department shall specify the frequencies for collecting samples and conducting statistical tests to determine whether there is statistically significant evidence of contamination for any parameter or hazardous constituent specified pursuant to (a) above in accordance with N.J.A.C. 7:14A-10.11(g). A sequence of at least four samples from each well (background and compliance wells) shall be collected at least semiannually during leak detection monitoring.

(e) The owner or operator shall determine the ground water flow rate and direction in the uppermost aquifer at least annually.

(f) The owner or operator shall determine whether there is statistically significant evidence of contamination for any chemical parameter or hazardous constituent specified pursuant to (a) above at a frequency specified pursuant to (d) above.

1. In determining whether statistically significant evidence of contamination exists, the owner or operator shall use the method(s) specified under N.J.A.C. 7:14A-10.11(h). These method(s) shall compare data collected at the compliance point(s) to the background ground water quality data.
2. The owner or operator shall determine whether there is statistically significant evidence of contamination at each monitoring well at the relevant point of compliance within a reasonable period of time after completion of sampling. The Department shall specify in the NJPDES-DGW permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground water samples.

(g) If the owner or operator determines pursuant to (f) above that there is statistically significant evidence of contamination for chemical parameters or hazardous constituents specified pursuant to (a) above at any monitoring well at the relevant point of compliance, the owner or operator shall:

1. Notify the Department of this finding in writing within seven days. The notification shall indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;
2. Immediately sample the ground water in all monitoring wells and determine whether constituents in the list of 40 C.F.R. Part 264 Appendix IX are present, and if so, in what concentration;
3. For any 40 C.F.R. Part 264 Appendix IX compounds found in the analysis pursuant to (g)2 above, the owner or operator may resample within one month and repeat the analysis for those compounds detected. If the results of the second analysis confirm the initial results, then these constituents shall form the basis for compliance monitoring. If the owner or operator does not resample for the compounds found pursuant to (g)2 above, the

hazardous constituents found during this initial 40 C.F.R. Part 264 Appendix IX analysis shall form the basis for compliance monitoring;

4. Within 90 days after statistically significant evidence for contamination is identified, submit to the Department an application for a permit modification to establish a compliance monitoring program meeting the requirements of N.J.A.C. 7:14A-10.13. The application shall include the following information:

   i. Identification of the concentration or any 40 C.F.R. Part 264 Appendix IX constituent detected in the ground water at each monitoring well at the compliance point;

   ii. Any proposed changes to the ground water monitoring system at the facility necessary to meet the requirements of N.J.A.C. 7:14A-10.13;

   iii. Any proposed additions or changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical methods used at the facility necessary to meet the requirements of N.J.A.C. 7:14A-10.13; and

   iv. For each hazardous constituent detected at the relevant compliance point, a proposed concentration limit under N.J.A.C. 7:14A-10.8(a) 1 or 2, or a notice of intent to seek an alternate concentration limit under N.J.A.C. 7:14A-10.8(b);

5. Within 180 days after statistically significant evidence for contamination is identified, submit to the Department:

   i. All data necessary to justify an alternate concentration limit sought under N.J.A.C. 7:14A-10.8(b); and

   ii. Engineering feasibility plan for a corrective action program necessary to meet the requirement of N.J.A.C. 7:14A-10.14, unless:

      (1) All hazardous constituents identified under (g)2 above are listed in N.J.A.C. 7:14A-10.8(a)2i and their concentrations do not exceed the ground water quality criteria of N.J.A.C. 7:9-6, or the 40 C.F.R. 264.94 Table 1 concentration, whichever is more stringent; or

      (2) The owner or operator has sought an alternate concentration limit under N.J.A.C. 7:14A-10.8(b) for every hazardous constituent identified under (g)2 above; and

6. If the owner or operator determines, pursuant to (f) above, that there is a statistically significant difference for chemical parameters or hazardous constituents specified pursuant to (a) above at any monitoring well at the compliance point, the owner or operator may demonstrate that a source other than the owner/operator's hazardous waste facility unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the

ground water. The owner operator may make a demonstration under this paragraph in addition to, or in lieu of, submitting a permit modification application under (g)4 above; however, the owner or operator is not relieved of the requirement to submit a permit modification application within the time specified in (g)4 above unless the demonstration made under this paragraph successfully shows that a source other than a hazardous waste facility unit caused the increase, or that the increase resulted from error in sampling or analysis. In making a demonstration under this paragraph, the owner or operator shall:

i. Notify the Department in writing within seven days of determining statistically significant evidence of contamination at the relevant point of compliance that the owner or operator intends to make a demonstration under this paragraph;

ii. Within 90 days after determining statistically significant evidence of contamination, submit a report to the Department which demonstrates that a source other than a hazardous waste facility unit caused the contamination or that the contamination resulted from error in sampling or analysis;

iii. Within 90 days after receipt by the Department of the report required in ii above, submit to the Department an application for a permit modification to make any appropriate changes to the leak detection monitoring program facility; and

iv. Continue to monitor in accordance with the leak detection monitoring program established under this section.

(h) If the owner or operator determines that the leak detection monitoring program no longer satisfies the requirements of this section, the owner or operator shall, within 90 days, submit an application for a permit modification to make any appropriate changes to the leak detection monitoring program.

7:14A-10.13 COMPLIANCE MONITORING PROGRAM

(a) The owner or operator required to establish a compliance monitoring program under this subchapter shall monitor the ground water at the relevant point(s) of compliance to determine whether hazardous waste facility units are in compliance with the ground water protection standard under N.J.A.C. 7:14A-10.6. The Department shall specify the ground water protection standard in the NJPDES-DGW permit, including:

1. A list of the hazardous constituents identified under N.J.A.C. 7:14A-10.7;

2. Concentration limits under N.J.A.C. 7:14A-10.8 for each of those hazardous constituents;

3. The relevant point of compliance under N.J.A.C. 7:14A-10.9; and

4. The compliance period under N.J.A.C. 7:14A-10.10.

(b) The owner or operator shall install a ground water monitoring system at the compliance point as specified under N.J.A.C. 7:14A-10.9. The ground water monitoring system shall comply with N.J.A.C. 7:14A-10.11(a), (b) and (c).

(c) The Department shall specify the sampling procedures and statistical methods appropriate for the specified hazardous constituents and the facility, consistent with N.J.A.C. 7:14A-10.11(g) and (h).

1. The owner or operator shall conduct a sampling program for each chemical parameter or hazardous constituent in accordance with N.J.A.C. 7:14A-10.11(g).

2. The owner or operator shall record ground water analytical data as measured and in a form necessary for the determination of statistical significance under N.J.A.C. 7:14A-10.11(h) for the compliance period of the facility.

(d) The owner or operator shall determine whether there is statistically significant evidence of increased contamination for any chemical parameter or hazardous constituent specified pursuant to (a) above at a frequency specified under (f) below.

1. In determining whether statistically significant evidence of increased contamination exists, the owner or operator shall use the method(s) specified under N.J.A.C. 7:14A-10.11(h). The method(s) shall compare data collected at the compliance point(s) to a concentration limit developed pursuant to N.J.A.C. 7:14A-10.8.

2. The owner or operator shall determine whether there is statistically significant evidence of increased contamination at each monitoring well at the compliance point within a reasonable time period after completion of sampling. The Department shall specify that time period in the NJPDES-DGW permit, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground water samples.

(e) The owner or operator shall determine the ground water flow rate and direction in the uppermost aquifer at least annually.

(f) The Department shall specify the frequencies for collecting samples and conducting statistical tests to determine statistically significant evidence of increased contamination in accordance with N.J.A.C. 7:14A-10.11(g). A sequence of at least four samples from each well (background and compliance wells) shall be collected at least semi-annually during the compliance period of the facility.

(g) The owner or operator shall analyze samples from all monitoring wells at the compliance point for all constituents contained in 40 C.F.R. Part 264 Appendix IX at least annually to determine whether additional hazardous constituents are present in the uppermost aquifer and, if so, at what concentration pursuant to procedures in N.J.A.C. 7:14A-10.12(f). If the owner or operator finds 40 C.F.R. Part 264 Appendix IX constituents in the ground water that are not already identified in the permit as monitoring constituents, the owner or operator may resample within one month and repeat the 40 C.F.R. 264 Appendix IX analysis. If the second analysis confirm the presence of new constituents, the owner or operator shall report the concentration of these additional constituents to the Department within seven days after the completion of the second analysis and add them to the list of constituents to be sampled for. If the owner or operator chooses not to resample, then the owner or operator shall report the concentrations of these additional constituents to the Department within seven days after completion of the initial analysis and add them to the list of constituents to be sampled for.

(h) If the owner or operator determines pursuant to (d) above that any concentration limits under N.J.A.C. 7:14A-10.8 are being exceeded at any monitoring well at the point of compliance, the owner or operator shall:

1. Notify the Department of this finding in writing within seven days. The notification shall indicate what concentration limits have been exceeded; and

2. Submit to the Department an application for a permit modification to establish a corrective action program meeting the requirements of N.J.A.C. 7:14A-10.14 within 180 days after determining that any concentration limits have been exceeded, or within 90 days after said determination if an engineering feasibility study has been previously submitted to the Department under N.J.A.C. 7:14A-10.12(h)5. The application shall, at a minimum, include the following information:

   i. A detailed description of corrective actions that shall achieve compliance with the ground water protection standard specified pursuant to (a) above; and

   ii. A plan for a ground water monitoring program that shall demonstrate the effectiveness of the corrective action. Such a ground water monitoring program may be based on a compliance monitoring program developed to meet the requirements of this section.

(i) If the owner or operator determines, pursuant to (d) above, that the ground water concentration limits under this section are being exceeded at any monitoring well at the point of compliance, the owner or operator may demonstrate that a source other than the owner/operator's hazardous waste facility unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in

the ground water. In making a demonstration under this paragraph, the owner or operator shall:

1. Notify the Department in writing within seven days that the owner or operator intends to make a demonstration under this paragraph;
2. Within 90 days of determining that the ground water concentration limits under this section are being exceeded, submit a report to the Department which demonstrates that a source other than a hazardous waste facility unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;
3. Within 90 days after receipt by the Department of the report required in (i)2 above, submit to the Department an application for a permit modification to make any appropriate changes to the compliance monitoring program at the facility; and
4. Continue to monitor in accord with the compliance monitoring program established under this section.

(j) If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this section, the owner or operator shall, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

7:14A-10.14 CORRECTIVE ACTION PROGRAM

(a) The owner or operator required to establish a compliance monitoring program under this subchapter shall take corrective action to ensure that hazardous waste facility units are in compliance with the ground water protection standards of N.J.A.C. 7:9-6. The Department shall specify the ground water protection standard in the NJPDES-DGW permit, including:

1. A list of the hazardous constituents identified under N.J.A.C. 7:14A-10.7;
2. Concentration limits under N.J.A.C. 7:14A-10.8 for each of those hazardous constituents;
3. The relevant point of compliance under N.J.A.C. 7:14A-10.9; and
4. The compliance period under N.J.A.C. 7:14A-10.10.

(b) The owner or operator shall implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place. The permit shall specify the specific measures that shall be taken.

(c) The owner or operator shall begin corrective action within a reasonable time period after the ground water protection standard is exceeded. The Department shall specify that time period in the NJPDES-

DGW permit includes a corrective action program in addition to a compliance monitoring program, the permit shall specify when the corrective action will begin and such a requirement will operate in lieu of N.J.A.C. 7:14A-10.13(i)2.

(d) In conjunction with a corrective action program, the owner or operator shall establish and implement a ground water monitoring program to demonstrate the effectiveness of the corrective action program Such a monitoring program may be based on the requirements for a compliance monitoring program under N.J.A.C. 7:14A-10.13 and shall be as effective as that program in determining compliance with the ground water protection standard under N.J.A.C. 7:14A-10.6 and in determining the success of a corrective action program under (e) below, where appropriate.

(e) In addition to the other requirements of this section, the owner or operator shall conduct a corrective action program to remove or treat in place any hazardous constituents under N.J.A.C. 7:14A-10.7 that exceed concentration limits under N.J.A.C. 7:14A-10.8 in ground water as specified in (e)1 and 2 below. Corrective action measures under this subsection shall be initiated and completed within a reasonable period of time, as specified in the NJPDES-DGW permit, considering the extent of contamination. Corrective action measures under this subsection may be terminated once the concentration of hazardous constituents under N.J.A.C. 7:14A-10.13. is reduced to levels below their respective concentration limits under N.J.A.C. 7:14A-10.8.

1. Between the compliance point under N.J.A.C. 7:14A-10.9 and the downgradient property boundary; and

2. Beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Department that, despite the owners or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. The owner or operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where offsite access is denied. Onsite measures to address such releases shall be determined on a case by case basis.

(f) The owner or operator shall continue corrective action measures during the compliance period to the extent necessary to ensure that the ground water protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, the owner or operator shall continue that corrective action for as long as necessary to achieve compliance with the ground water protection standard. The owner or operator may terminate corrective action measures taken beyond the period equal to the active life of the hazardous waste facility area (including the closure period) if the owner or operator can demonstrate, based on data from the ground water monitoring program under (d) above that the ground water protection standard of N.J.A.C. 7:14A-10.6 has not been exceeded for a period of three consecutive

years.

(g) The owner or operator shall report in writing to the Department on the effectiveness of the corrective action program. The owner or operator shall submit these reports semiannually.

(h) If the owner or operator determines that the corrective action program no longer satisfies the requirements if this section, the owner or operator shall, within 90 days after said determination, submit an application for a permit modification to make any appropriate changes to the program.

7:14A-10.15 APPLICATION REQUIREMENTS FOR NJPDES-DGW PERMITS FOR HAZARDOUS WASTE FACILITIES

Application requirements for hazardous waste facilities are the same as those listed in N.J.A.C. 7:14A-7.9.

7:14A-10.16 APPLICATION REQUIREMENTS FOR NJPDES-DGW PERMITS FOR HAZARDOUS WASTE FACILITIES WITH SURFACE IMPOUNDMENTS

Application requirements for hazardous waste facility surface impoundments shall be the same as those listed in N.J.A.C. 7:14A-7.10.

7:14A-10.17 APPLICATION REQUIREMENTS FOR NJPDES-DGW PERMITS FOR HAZARDOUS WASTE FACILITIES WITH LAND DISCHARGE BY INFILTRATION-PERCOLATION LAGOONS

Application requirements for hazardous waste facility land discharge by infiltration-percolation lagoons shall be the same as those listed in N.J.A.C. 7:14A-7.13.

7:14A-10.18 APPLICATION REQUIREMENTS FOR NJPDES-DGW PERMITS FOR HAZARDOUS WASTE LANDFILLS

Application requirements for hazardous waste landfills shall be the same as the requirements for sanitary landfills as described in N.J.A.C. 7:14A-9.12.